



# STIC Search Report

**EIC 1700**

STIC Database Tracking Number: 194202

**TO: Sanza McClendon**  
**Location: REM 10D51**  
**Art Unit : 1711**  
**June 29, 2006**

**Case Serial Number: 10/806450**

**From: Kathleen Fuller**  
**Location: EIC 1700**  
**REMSSEN 4B28**  
**Phone: 571/272-2505**  
**Kathleen.Fuller@uspto.gov**

## Search Notes

I did a structure search for the claim 1 compound-3556 structures found.  
The applicant is not indexed with a ring structure but only with derivative preparations of the starting materials. Combining the ring structures or the starting materials with utility there were 20 CA references.



# STIC Search Results Feedback Form

**EIC17000**

Questions about the scope or the results of the search? Contact the EIC searcher or contact:

Kathleen Fuller, EIC 1700 Team Leader  
571/272-2505 REMSEN 4B28

## Voluntary Results Feedback Form

- I am an examiner in Workgroup  Example 1713
- Relevant prior art found, search results used as follows

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art not found:

- ☐ Results verified the lack of relevant prior art (helped determine patentability)
- ☐ Results were not useful in determining patentability or understanding the invention

Comments:

**Banks; Kendra**

**From:** SANZA MCCLENDON [sanza.mccleendon@uspto.gov]  
**Sent:** Wednesday, June 28, 2006 10:03 AM  
**To:** STIC-EIC1700  
**Subject:** Database Search Request, Serial Number: 10/806,450

194202

SCIENTIFIC REFERENCE BR  
Sci & Tech Inf. Cnt.

JUN 29 2006  
Pat. & T.M. Office

**Requester:**  
SANZA MCCLENDON (P/1711)  
**Art Unit:**  
GROUP ART UNIT 1711  
**Employee Number:**  
75688  
**Office Location:**  
REM 10D51  
**Phone Number:**  
(571)272-1074  
**Mailbox Number:**  
10D79

**Case serial number:**  
10/806,450  
**Class / Subclass(es):**  
528/37  
**Earliest Priority Filing Date:**  
3/23/04  
**Format preferred for results:**  
Paper

**Search Topic Information:**  
please search the polymer of claim 1, with subsequent definitions in claims 2-3.  
**Special Instructions and Other Comments:**

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\* effective March 20, 2005. A new display format, IDERL, is now \*  
\* available and contains the CA role and document type information. \*  
\*  
\*\*\*\*\*

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FILE COVERS 1907 - 28 Jun 2006 VOL 145 ISS 1  
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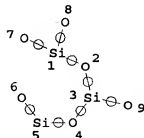
This file contains CAS Registry Numbers for easy and accurate substance identification.

L25

11 SEA FILE=REGISTRY ABB=ON (106392-12-5/BI OR 115-21-9/BI OR  
1785-61-1/BI OR 17886-89-4/BI OR 18164-08-4/BI OR 2401-73-2/BI  
OR 501-65-5/BI OR 536-74-3/BI OR 75-77-4/BI OR 9004-74-4/BI OR  
98-12-4/BI)

L26

STR



3,556 structures from  
this query

NSPEC	IS	R	AT	1
NSPEC	IS	R	AT	2
NSPEC	IS	R	AT	3
NSPEC	IS	R	AT	4
NSPEC	IS	R	AT	5
NSPEC	IS	R	AT	6
NSPEC	IS	R	AT	7
NSPEC	IS	R	AT	8
NSPEC	IS	R	AT	9

DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 9

L28 6 SEA FILE=REGISTRY ABB=ON L25 AND SI/ELS

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L28          6 SEA FILE=REGISTRY ABB=ON L25 AND SI/ELS
L29          3556 SEA FILE=REGISTRY SSS FUL L26
L30          1561 SEA FILE=HCAPLUS ABB=ON L29
L31          21 SEA FILE=HCAPLUS ABB=ON L30 AND INSULAT? (4A) FILM#
L32          683 SEA FILE=HCAPLUS ABB=ON L28/D
L33          6 SEA FILE=HCAPLUS ABB=ON L32 AND INSULAT? (4A) FILM#
L34          20 SEA FILE=HCAPLUS ABB=ON (L31 OR L33) AND PLASTIC?/SC, SX

```

=> D L34 BIB ABS IND HITSTR 1-20

AN 2006:513123 HCAPLUS

DN 144:498258

TI Photosensitive resin composition, thin film pattern formation,  
and insulating film for electric device

IN Nakamura, Shigeru; Azuma, Kenichi; Matsukawa, Kimihiro; Matsuura, Yukihiro

PA Sekisui Chemical Co., Ltd., Japan

50 Jpn. Kokai Tokkyo Koho, 21 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2006139083	A2	20060601	JP 2004-328858	20041112
PRAI	JP 2004-328858		20041112		

AB The composition contains (A) polysilane (SiR1R2)<sub>m</sub>(SiR3R4)<sub>n</sub> (R1-4 = aliphatic hydrocarbyl; alicyclic or aromatic hydrocarbyl, polar group, H), (B) a sensitizer, (C) alkoxyisilane polymer with weight average mol. weight 300-50,000 at A : C = 100 : (25-3000) (weight ratio). The composition optionally contains (D) transparent particles with particle size ≤100 nm at A : (C + D) = 100 : (20-3000). Alternatively, the composition contains A, B, C, and (E) an alkoxyisilane at A : (C + E) = 100 : (25-3000) (weight ratio). Thin film pattern is manufactured by the steps of (1) coating a substrate with the photosensitive resin compn, (2) patternwise exposing for latent image formation, (3) developing with an aqueous alkali solution, and (4) irradiating

OR heating. The elec. insulating film formed from the composition, liquid crystal display and semiconductor element using the insulating film are also claimed. The composition shows high sensitivity, developable with aqueous alkali, and gives stable pattern with good elec. insulating property.

CC 74-4 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST Section cross-reference(s): 38, 76

IT photosensitive resin dielec film semiconductor device liq crystal display; polysilane alkoxyisilane polymer sensitizer photosensitive resin compn

IT Photoimaging materials (photopolymerizable; photosensitive composition containing polysilane, sensitizer, and alkoxyisilane polymer for dielec. films)

IT Dielectric films Liquid crystal displays Semiconductor device fabrication (photosensitive composition containing polysilane, sensitizer, and alkoxyisilane polymer for dielec. films)

IT Polysilanes Silsesquioxanes RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (photosensitive composition containing polysilane, sensitizer, and alkoxyisilane polymer for dielec. films)

IT 31324-77-3P, Methylphenyldichlorosilane homopolymer 51350-55-1P 76188-55-1P, Poly(methylphenylsilylene) 124741-08-8P, Phenyltriethoxysilane homopolymer RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (photosensitive composition containing polysilane, sensitizer, and alkoxyisilane polymer for dielec. films)

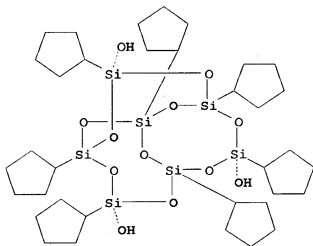
IT 135225-24-0 RL: TEM (Technical or engineered material use); USES (Uses) (photosensitive composition containing polysilane, sensitizer, and alkoxyisilane polymer for dielec. films)

IT 780-69-8, Phenyltriethoxysilane 7631-86-9, PL 2L PGMEA, uses RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)

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(photosensitive composition containing; photosensitive composition containing polysilane, sensitizer, and alkoxysilane polymer for dielec. films)  
IT 77473-08-6, 3,3',4,4'-Tetra(tert-butylperoxycarbonyl)benzophenone  
RL: TEM (Technical or engineered material use); USES (Uses)  
(sensitizer; photosensitive composition containing polysilane, sensitizer, and alkoxysilane polymer for dielec. films)  
IT 135225-24-0  
RL: TEM (Technical or engineered material use); USES (Uses)  
(photosensitive composition containing polysilane, sensitizer, and alkoxysilane polymer for dielec. films)  
RN 135225-24-0 HCAPLUS  
CN Tricyclo[7.3.3.15,11]heptasiloxane-3,7,14-triol, 1,3,5,7,9,11,14-heptacyclopentyl-, stereoisomer (9CI) (CA INDEX NAME)

Relative stereochemistry.



L34 ANSWER 2 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2006:145628 HCAPLUS

DN 144:351846

TI Low- $\kappa$  nanocomposite films based on polyimides with grafted polyhedral oligomeric silsesquioxane

AU Chen, Yiwang; Chen, Lie; Nie, Huarong; Kang, E. T.

CS School of Materials Science and Engineering, Nanchang University,

Nanchang, 330047, Peop. Rep. China

SO Journal of Applied Polymer Science (2006), 99(5), 2226-2232

CODEN: JAPNAB; ISSN: 0021-8995

PB John Wiley & Sons, Inc.

DT Journal

LA English

AB Nanocomposites of polyimides (PI) with covalently grafted polyhedral oligomeric silsesquioxane (R<sub>7</sub>R'Si<sub>8</sub>O<sub>12</sub> or POSS) units were prepared by thermally-initiated free-radical graft polymerization of methacrylcyclopentyl-POSS (MA-POSS) with the ozone-pretreated poly[N,N'-(1,4-phenylene)-3,3',4,4'-benzophenonetetracarboxylic amic acid] (PAA), followed by thermal imidization. The chemical composition and structure of the PI with grafted methacrylcyclopentyl-POSS side chains (PI-g-PMA-POSS copolymers) were characterized by NMR, x-ray diffraction (XRD), and thermogravimetric

anal. (TGA). The POSS mols. in each grafted PMA side chain of the amorphous PI films retained the nanoporous crystalline structure, and formed an aggregate of crystallites. The PI-g-PMA-POSS nanocomposite films had both lower and tunable dielec. consts., in comparison with that of the pristine PI films. Dielec. consts. ( $\kappa$ 's) of about 3.0-2.2 were obtained. The present approach offers a convenient way for preparing low- $\kappa$  materials based on existing PI's.

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

ST low dielec nanocomposite film polyimide grafted polyhedral oligomeric silsesquioxane

IT Polymer morphology  
(fracture-surface; low- $\kappa$  nanocomposite films based on polyimides with grafted polyhedral oligomeric silsesquioxane)

IT Density

Dielectric constant

Electric insulators

Glass transition temperature

Nanocomposites

Plastic films

Porosity

(low- $\kappa$  nanocomposite films based on polyimides with grafted polyhedral oligomeric silsesquioxane)

IT Silsesquioxanes

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP

(Preparation); RACT (Reactant or reagent)

(polyamic acid-, acrylic, cardo, graft, intermediates; low- $\kappa$  nanocomposite films based on polyimides with grafted polyhedral oligomeric silsesquioxane)

IT Silsesquioxanes

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(polyimide-polyketone-, acrylic, cardo, graft; low- $\kappa$  nanocomposite films based on polyimides with grafted polyhedral oligomeric silsesquioxane)

IT Polyketones

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(polyimide-silsesquioxane-, acrylic, cardo, graft; low- $\kappa$  nanocomposite films based on polyimides with grafted polyhedral oligomeric silsesquioxane)

IT Polyimides, properties

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(polyketone-silsesquioxane-, acrylic, cardo, graft; low- $\kappa$  nanocomposite films based on polyimides with grafted polyhedral oligomeric silsesquioxane)

IT Fracture surface morphology

(polymeric; low- $\kappa$  nanocomposite films based on polyimides with grafted polyhedral oligomeric silsesquioxane)

IT Polyamic acids

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(silsesquioxane-, acrylic, cardo, graft, intermediates; low- $\kappa$  nanocomposite films based on polyimides with grafted polyhedral oligomeric silsesquioxane)

IT 845508-91-0P

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(intermediate; low- $\kappa$  nanocomposite films based on polyimides with grafted polyhedral oligomeric silsesquioxane)

IT 845508-91-0DP, imidized

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT



(Reactant or reagent)

(low- $\kappa$  nanocomposite films based on polyimides with grafted polyhedral oligomeric silsesquioxane)

IT 845508-91-0P

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(intermediate; low- $\kappa$  nanocomposite films based on polyimides with grafted polyhedral oligomeric silsesquioxane)

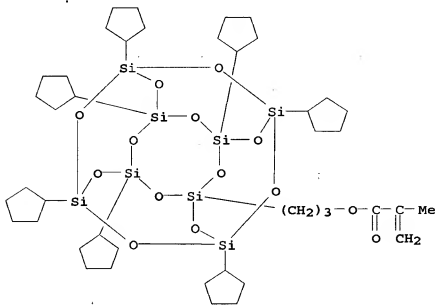
RN 845508-91-0 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 3-(heptacyclopentylpentacyclo[9.5.1.13.9.15,15.17,13]octasiloxanyl)propyl ester, polymer with 1,4-benzenediamine and 5,5'-carbonylbis[1,3-isobenzofurandione], graft (9CI) (CA INDEX NAME)

CM 1

CRN 169391-91-7

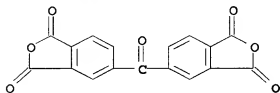
CMF C42 H74 O14 Si8



CM 2

CRN 2421-28-5

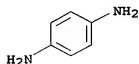
CMF C17 H6 O7

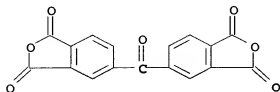


CM 3

CRN : 106-50-3

CMF C6 H8 N2

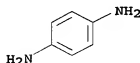




CM 3

CRN 106-50-3

CMF C6 H8 N2



RE.CNT 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L34 ANSWER 3 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:1261789 HCAPLUS

DN 144:7797

TI Manufacture of cage silsesquioxane thin films with good heat resistance  
and little gas emission by thermolysis

IN Ide, Yoichiro; Doi, Ichiro

PA Asahi Kasei Corporation, Japan

SO Jpn. Kokai Tokkyo Koho, 16 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005330455	A2	20051202	JP 2004-214384	20040722
PRAI	JP 2004-124148	A	20040420		

AB The manufacturing method contains coating solns. containing  $\geq 2$  silsesquioxane cage-containing compds. bonding via linking groups on substrates and pyrolyzing the linking groups. Thin films by the method are useful for elec. insulators and plasma display panels. Thus, a 1,3-divinyltetramethyldisiloxane-bonded octakis(dimethylsiloxy)octasilsesquioxane (I) compound THF solution was coated on a Si wafer and heated to give a transparent thin film of I homopolymer showing weight loss on heating at 110-1000° 2.6% and thickness 390 nm.

IC ICM C08J005-18

ICS C08L083-04

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 74, 76

ST heat resistance cage silsesquioxane thin film; transparency cage silsesquioxane film plasma display; elec insulator cage silsesquioxane thin film; gas emission prevention octadimethylsiloxyoctasilsesquioxane homopolymer film; thermolysis divinyltetramethyldisiloxane bonded octadimethylsiloxyoctasilsesquioxane thin film

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IT Dielectric films  
Plasma display panels  
Plastic films  
Transparent films  
(cage silsesquioxane thin films with good heat resistance and little gas emission by thermolysis)

IT Polyoxyalkylenes, processes  
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); RCT (Reactant); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)  
(cage silsesquioxane thin films with good heat resistance and little gas emission by thermolysis)

IT Silsesquioxanes  
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); RACT (Reactant or reagent); USES (Uses)  
(cage silsesquioxane thin films with good heat resistance and little gas emission by thermolysis)

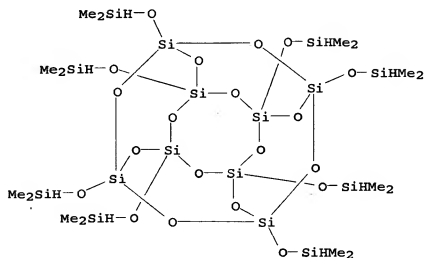
IT 2627-95-4DP, 1,3-Divinyltetramethyldisiloxane, reaction products with octakis(dimethylsiloxy)octasilsesquioxane 18769-05-6DP, 1,3-Divinyltetraphenyldisiloxane, reaction products with octakis(dimethylsiloxy)octasilsesquioxane 50856-26-3DP, Poly(ethylene glycol) divinyl ether, reaction products with octakis(dimethylsiloxy)octasilsesquioxane 125756-69-6DP, Octakis(dimethylsiloxy)octasilsesquioxane, reaction products with vinyl-containing disiloxanes  
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); RCT (Reactant); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)  
(cage silsesquioxane thin films with good heat resistance and little gas emission by thermolysis)

IT 173775-22-9P, Octakis(dimethylsiloxy)octasilsesquioxane-octavinylsilsesquioxane copolymer  
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)  
(cage silsesquioxane thin films with good heat resistance and little gas emission by thermolysis)

IT 779334-56-4P, Octakis(dimethylsiloxy)octasilsesquioxane homopolymer  
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(cage silsesquioxane thin films with good heat resistance and little gas emission by thermolysis)

IT 125756-69-6DP, Octakis(dimethylsiloxy)octasilsesquioxane, reaction products with vinyl-containing disiloxanes  
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); RCT (Reactant); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)  
(cage silsesquioxane thin films with good heat resistance and little gas emission by thermolysis)

RN 125756-69-6 HCAPLUS  
CN Pentacyclo[9.5.1.13.9.15.15.17.13]octasiloxane, octakis(dimethylsilyl)oxy- (9CI) (CA\_INDEX NAME)

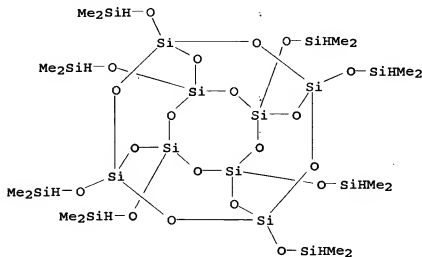


IT 173775-22-9P, Octakis(dimethylsiloxy)octasilsesquioxane-octavinyl octasilsesquioxane copolymer  
 RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)  
 (cage silsesquioxane thin films with good heat resistance and little gas emission by thermolysis)  
 RN 173775-22-9 HCAPLUS  
 CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octaethenyl-, polymer with octakis[(dimethylsilyl)oxy]pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane (9CI) (CA INDEX NAME)

CM 1

CRN 125756-69-6

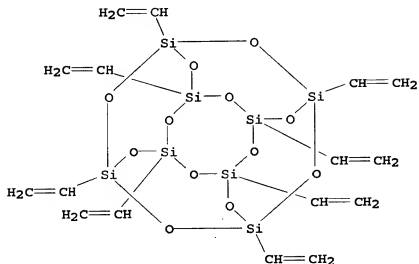
CMF C16 H56 O20 Si16



CM 2

CRN 69655-76-1

CMF C16 H24 O12 Si8



IT 779334-56-4P, Octakis(dimethylsiloxy)octasilsesquioxane  
homopolymer

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(cage silsesquioxane thin films with good heat resistance and little gas emission by thermolysis)

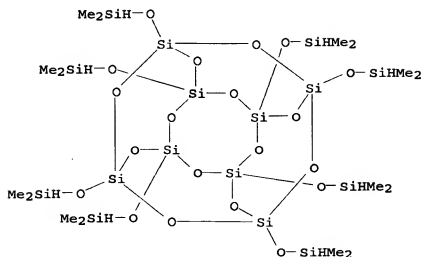
RN 779334-56-4 HCAPLUS

CN Pentacyclo[9.5.1.13.9.15,15.17,13]octasiloxane,  
octakis[(dimethylsilyl)oxy]-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 125756-69-6

CMF C16 H56 O20 Si16



L34 ANSWER 4 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:1172173 HCAPLUS

DN 143:450745

TI Heat-resistant photosensitive polymer compositions for semiconductor devices

IN Komatsu, Hiroshi

PA Hitachi Chemical Du Pont Micro System Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 18 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005309214	A2	20051104	JP 2004-128211	20040423
PRAI	JP 2004-128211		20040423		

AB The comps. comprise (A) heat-resistant polymers or their precursors having acid groups and Si functional groups on side chains and/or terminals, (B) photoacid generators, and (C) solvents. The comps. show improved adhesion to substrates, and are useful as protective layers, interlayer insulator films, etc., for semiconductor devices.

IC ICM G03F007-075

ICS G03F007-004; G03F007-037; G03F007-039; H01L021-027

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 38, 74

ST photosensitive polymer heat resistance polyimide polybenzoxazole

IT Photolithography materials

Semiconductor devices

(heat-resistant photosensitive polymer comps. for semiconductor devices)

IT Polyethers, uses

RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (polybenzoxazole-, fluorine-containing; heat-resistant photosensitive polymer comps. for semiconductor devices).

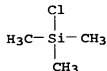
IT Polyimides, uses

RL: DEV (Device component use); IMF (Industrial manufacture); TEM

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

- (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polybenzoxazole-polyether-, fluorine-containing; heat-resistant photosensitive polymer compns. for semiconductor devices)
- IT Fluoropolymers, uses  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
(Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polybenzoxazole-polyether-, heat-resistant photosensitive polymer compns. for semiconductor devices)
- IT Fluoropolymers, uses  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
(Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polybenzoxazole-polyether-polyimide-, heat-resistant photosensitive polymer compns. for semiconductor devices)
- IT Polyethers, uses  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
(Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polybenzoxazole-polyimide-, fluorine-containing; heat-resistant photosensitive polymer compns. for semiconductor devices)
- IT Polybenzoxazoles  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
(Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polyether-, fluorine-containing; heat-resistant photosensitive polymer compns. for semiconductor devices)
- IT Polybenzoxazoles  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
(Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polyether-polyimide-, fluorine-containing; heat-resistant photosensitive polymer compns. for semiconductor devices)
- IT 75-77-4DP, Chlorotrimethylsilane, reaction product with  
2,2-Bis(3-amino-4-hydroxyphenyl)hexafluoropropane-4,4'-  
oxybis(carboxyphenyl) copolymer 1823-59-2DP, Bis(3,4-dicarboxyphenyl)  
ether dianhydride, ester with hydroxymethyldimethylsilane, polymer with  
2,2-bis(3-amino-4-hydroxyphenyl)hexafluoropropane 18230-72-3DP,  
Hydroxymethyldimethylsilane, ester with bis(3,4-dicarboxyphenyl) ether  
dianhydride, polymer with 2,2-bis(3-amino-4-hydroxyphenyl)hexafluoropropane  
e 83558-87-6DP, 2,2-Bis(3-amino-4-hydroxyphenyl)hexafluoropropane,  
polymer with bis(3,4-dicarboxyphenyl) ether dianhydride  
hydroxymethyldimethylsilane ester 112480-83-8DP, reaction product with  
chlorotrimethylsilane 112492-60-1DP, reaction product with  
chlorotrimethylsilane  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
(Technical or engineered material use); PREP (Preparation); USES (Uses)  
(heat-resistant photosensitive polymer compns. for semiconductor  
devices)
- IT 852059-78-0P  
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation);  
USES (Uses)  
(photoacid generator; heat-resistant photosensitive polymer compns. for  
semiconductor devices)
- IT 75-77-4DP, Chlorotrimethylsilane, reaction product with  
2,2-Bis(3-amino-4-hydroxyphenyl)hexafluoropropane-4,4'-  
oxybis(carboxyphenyl) copolymer  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
(Technical or engineered material use); PREP (Preparation); USES (Uses)  
(heat-resistant photosensitive polymer compns. for semiconductor  
devices)
- RN 75-77-4 HCAPLUS  
CN Silane, chlorotrimethyl- (8CI, 9CI) (CA INDEX NAME)





L34 ANSWER 5 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:960092 HCAPLUS

DN 143:249399

TI Diamines bearing silsesquioxanes, and their polymers showing low dielectric constant and optical transmission loss, and their applications

IN Kato, Takashi; Okuma, Yasuyuki

PA Chisso Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 17 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005232024	A2	20050902	JP 2004-39577	20040217
PRAI	JP 2004-39577		20040217		
OS	MARPAT 143:249399				
GI					

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB The diamines have 1 or 2 silsesquioxane groups I [X = C1-20 (halo)alkyl, C2-20 (halo)alkenyl, C6-20 (halo)aryl; CH2 of X may be replaced with O]. Polyamic acids, polyimides, polyamides, and polyamide-polyimides are manufactured from the diamines. The above polymers are useful for insulating, protective, liquid crystal alignment films for optical waveguides, semiconductor integrated circuits, and liquid crystal displays. Thus, silsesquioxane Na salt II was treated with MeCO2CH2SiCl3, hydrolyzed, treated with 3,5-dinitrobenzoyl chloride, and hydrogenated to give III. 4,4'-(Hexafluoroisopropylidene)dipthalic dianhydride was polymerized with III, diluted with cyclohexane, and cast give a polyimide film showing thermal decomposition temperature 359.9° and dielec. constant 2.59.

IC ICM C07F007-21

ICS C08G069-42; C08G073-10; C08G077-388

CC 38-3 (Plastics Fabrication and Uses)

ST Section cross-reference(s): 29, 35, 73, 74, 76

ST silsesquioxane diamine polyimide dielec film; optical waveguide

ST silsesquioxane diamine polymer; liq crystal display silsesquioxane diamine polymer; polyamide polyimide silsesquioxane diamine film

IT Dielectric films

IT Integrated circuits

IT Liquid crystal displays

IT Optical materials

IT Optical waveguides

IT Plastic films

(diamines bearing silsesquioxanes for polyimides, polyamides, and polyamide-polyimides showing low dielec. constant and optical transmission loss)

IT Polyamic acids

- RL: DEV (Device component use); IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
(fluorine-containing; diamines bearing silsesquioxanes for polyimides, polyamides, and polyamide-polyimides showing low dielec. constant and optical transmission loss)
- IT Polyamides, uses  
Polyimides, uses  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(fluorine-containing; diamines bearing silsesquioxanes for polyimides, polyamides, and polyamide-polyimides showing low dielec. constant and optical transmission loss)
- IT Fluoropolymers, uses  
RL: DEV (Device component use); IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
(polyamic acid-; diamines bearing silsesquioxanes for polyimides, polyamides, and polyamide-polyimides showing low dielec. constant and optical transmission loss)
- IT Polyimides, uses  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polyamide-, fluorine-containing; diamines bearing silsesquioxanes for polyimides, polyamides, and polyamide-polyimides showing low dielec. constant and optical transmission loss)
- IT Fluoropolymers, uses  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polyamide-; diamines bearing silsesquioxanes for polyimides, polyamides, and polyamide-polyimides showing low dielec. constant and optical transmission loss)
- IT Fluoropolymers, uses  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polyamide-polyimide-; diamines bearing silsesquioxanes for polyimides, polyamides, and polyamide-polyimides showing low dielec. constant and optical transmission loss)
- IT Polyamides, uses  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polyimide-, fluorine-containing; diamines bearing silsesquioxanes for polyimides, polyamides, and polyamide-polyimides showing low dielec. constant and optical transmission loss)
- IT Fluoropolymers, uses  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polyimide-; diamines bearing silsesquioxanes for polyimides, polyamides, and polyamide-polyimides showing low dielec. constant and optical transmission loss)
- IT 863323-79-9P 863396-46-7P  
RL: DEV (Device component use); IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
(diamines bearing silsesquioxanes for polyimides, polyamides, and polyamide-polyimides showing low dielec. constant and optical transmission loss)
- IT 863323-80-2P 863323-81-3P 863323-82-4P 863323-83-5P  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM

(Technical or engineered material use); PREP (Preparation); USES (Uses)  
(diamines bearing silsesquioxanes for polyimides, polyamides, and  
polyamide-polyimides showing low dielec. constant and optical  
transmission loss)

IT 757199-00-1P 757199-24-9P 863323-77-7P  
863323-78-8P  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
(Reactant or reagent)  
(diamines bearing silsesquioxanes for polyimides, polyamides, and  
polyamide-polyimides showing low dielec. constant and optical  
transmission loss)

IT 99-33-2, 3,5-Dinitrobenzoyl chloride 18204-80-3 656800-11-2  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(diamines bearing silsesquioxanes for polyimides, polyamides, and  
polyamide-polyimides showing low dielec. constant and optical  
transmission loss)

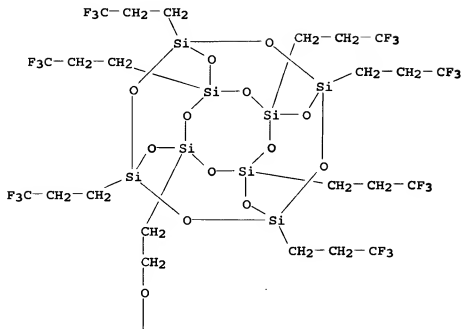
IT 863323-79-9P  
RL: DEV (Device component use); IMF (Industrial manufacture); RCT  
(Reactant); TEM (Technical or engineered material use); PREP  
(Preparation); RACT (Reactant or reagent); USES (Uses)  
(diamines bearing silsesquioxanes for polyimides, polyamides, and  
polyamide-polyimides showing low dielec. constant and optical  
transmission loss)

RN 863323-79-9 HCAPLUS  
CN Benzoic acid, 2,5-diamino-, 2-[heptakis(3,3,3-  
trifluoropropyl)pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxanyl]ethyl  
ester, polymer with 5,5'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bi  
s[1,3-isobenzofurandione] (9CI) (CA INDEX NAME)

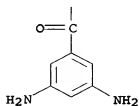
CM 1

CRN 863323-78-8  
CMF C30 H39 F21 N2 O14 S18

PAGE 1-A



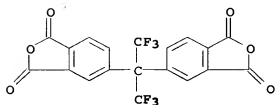
PAGE 2-A



CM 2

CRN 1107-00-2

CMF C19 H6 F6 O6



IT 863323-80-2P 863323-81-3P 863323-82-4P

863323-83-5P

RL: DEV (Device component use); IMF (Industrial manufacture); TEM

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

(Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (diamines bearing silsesquioxanes for polyimides, polyamides, and  
 polyamide-polyimides showing low dielec. constant and optical  
 transmission loss)

RN 863323-80-2 HCAPLUS

CN Poly[(1,3-dihydro-1,3-dioxo-2H-isoindole-2,5-diyl)[2,2,2-trifluoro-1-  
 (trifluoromethyl)ethylidene](1,3-dihydro-1,3-dioxo-2H-isoindole-5,2-  
 diyl)[5-[[2-[heptakis(3,3,3-trifluoropropyl)pentacyclo[9.5.1.13,9.15,15.17,  
 13]octasiloxanyl]ethoxy]carbonyl]-1,3-phenylene]] (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

RN 863323-81-3 HCAPLUS

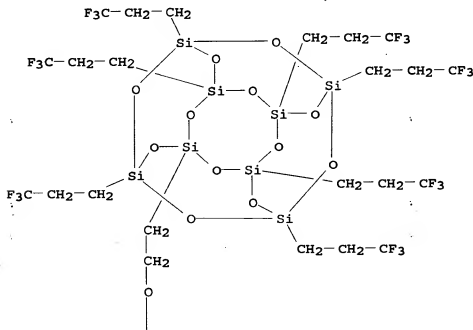
CN Benzoic acid, 2,5-diamino-, 2-[heptakis(3,3,3-trifluoropropyl)pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxanyl]ethyl  
 ester, polymer with 1,4-benzenedicarbonyl dichloride (9CI) (CA INDEX  
 NAME)

CM 1

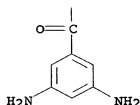
CRN 863323-78-8

CMF C30 H39 F21 N2 O14 Si8

PAGE 1-A



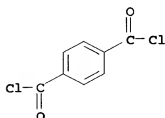
PAGE 2-A



CM 2

CRN 100-20-9

CMF C8 H4 Cl2 O2



RN 863323-82-4 HCAPLUS

CN Poly[imino[5-[[2-[heptakis(3,3,3-trifluoropropyl)pentacyclo[9.5.1.13.9.15,15.17,13]octasiloxanyl]ethoxy]carbonyl]-1,3-phenylene]iminocarbonyl-1,4-phenylenecarbonyl] (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

RN 863323-83-5 HCAPLUS

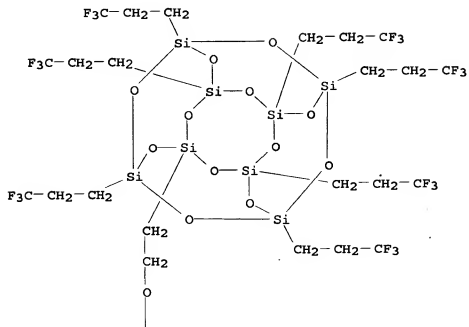
CN Benzoic acid, 2,5-diamino-, 2-[heptakis(3,3,3-trifluoropropyl)pentacyclo[9.5.1.13.9.15,15.17,13]octasiloxanyl]ethyl ester, polymer with 1,3-dihydro-1,3-dioxo-5-isobenzofurancarboxyl chloride (9CI) (CA INDEX NAME)

CM 1

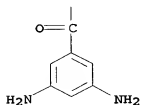
CRN 863323-78-8

CMF: C30 H39 F21 N2 O14 Si8

PAGE 1-A



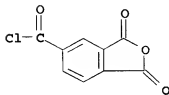
PAGE 2-A



CM 2

CRN 1204-28-0

CMF C9 H3 Cl O4



IT 757199-00-1P 757199-24-9P 863323-77-7P

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

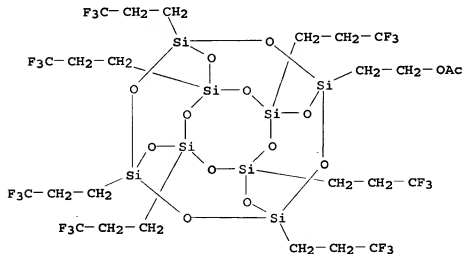
863323-78-8P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(diamines bearing silsesquioxanes for polyimides, polyamides, and polyamide-polyimides showing low dielec. constant and optical transmission loss)

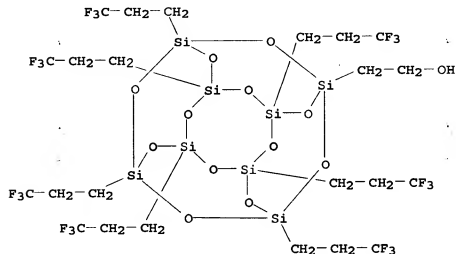
RN 757199-00-1 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxaneethanol, 3,5,7,9,11,13,15-heptakis(3,3,3-trifluoropropyl)-, acetate (9CI) (CA INDEX NAME)



RN 757199-24-9 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxaneethanol, 3,5,7,9,11,13,15-heptakis(3,3,3-trifluoropropyl)- (9CI) (CA INDEX NAME)



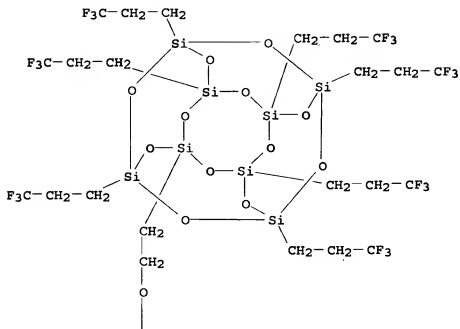
RN 863323-77-7 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxaneethanol, 3,5,7,9,11,13,15-heptakis(3,3,3-trifluoropropyl)-, 3,5-dinitrobenzoate

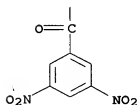


(9CI) (CA INDEX NAME)

PAGE 1-A

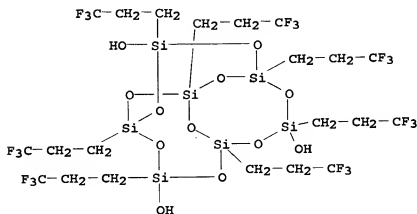


PAGE 2-A



RN 863323-78-8 HCAPLUS  
 CN Benzoic acid, 3,5-diamino-, 2-[heptakis(3,3,3-trifluoropropyl)pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxany]ethyl ester (9CI) (CA INDEX NAME)

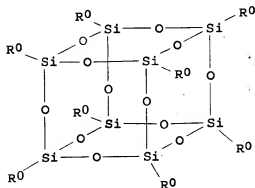




● 3 Na

L34 ANSWER 6 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2004:907094 HCAPLUS  
 DN 141:387394  
 TI Material for porous interlayer insulating film of  
 semiconductor element  
 IN Adegawa, Yutaka  
 PA Fuji Photo Film Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 36 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004303777	A2	20041028	JP 2003-91768	20030328
PRAI	JP 2003-91768		20030328		
GI					



I

AB Disclosed is the material for a porous interlayer insulating film comprising (a) a low mol. weight compound represented by I (R0 =

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

1-4 valent group) or a resin having a repeating unit I, and (b) a compound having a b.p. or decomposition temperature 250-450° or (b') a hollow microparticle. The porous interlayer insulating film exhibited excellent heat and crack resistances.

IC ICM H01L021-312

CC 76-10 (Electric Phenomena)

Section cross-reference(s): 35, 38

ST porous interlayer insulating film polysiloxane

semiconductor element

IT Electric insulators

Semiconductor devices

(material containing polysiloxane for porous interlayer insulating film of semiconductor element)

IT Silsesquioxanes

RL: NUU (Other use, unclassified); USES (Uses)

(material containing polysiloxane for porous interlayer insulating film of semiconductor element)

IT 691397-13-4, Newpol PE-61

RL: NUU (Other use, unclassified); USES (Uses)

(material containing polysiloxane for porous interlayer insulating film of semiconductor element)

IT 782486-46-8P

RL: NUU (Other use, unclassified); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(preparation of material containing polysiloxane for porous interlayer insulating film of semiconductor element)

IT 115-21-9, Ethyltrichlorosilane 536-74-3, Phenylacetylene 536-74-3D,

Phenylacetylene, reaction products with siloxanes 17113-33-6,

2-Phenylfuran 27752-77-8, Bromophenyltrichlorosilane 784201-89-4

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of material containing polysiloxane for porous interlayer insulating film of semiconductor element)

IT 782486-44-6P 782486-45-7P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation of material containing polysiloxane for porous interlayer insulating film of semiconductor element)

IT 782486-46-8P

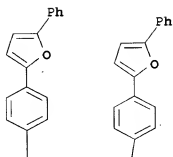
RL: NUU (Other use, unclassified); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(preparation of material containing polysiloxane for porous interlayer insulating film of semiconductor element)

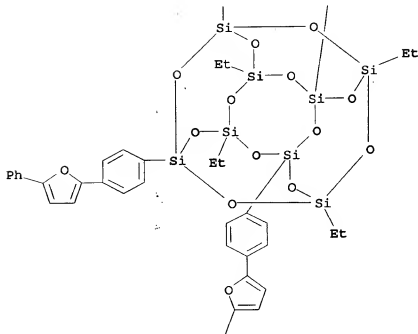
RN 782486-46-8 HCAPLUS

CN Pentacyclo[9.5.1.13.9.15.15.17.13]octasiloxane, 1,3,7,13-tetraethyl-5,9,11,15-tetrakis[4-(5-phenyl-2-furanyl)phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

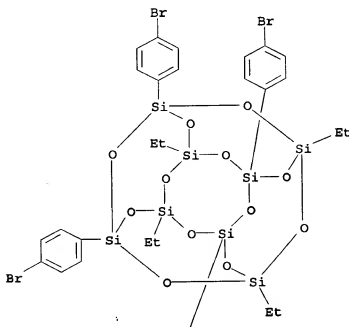


PAGE 3-A

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Ph

IT 782486-44-6P 782486-45-7P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (preparation of material containing polysiloxane for porous interlayer  
 insulating film of semiconductor element)  
 RN 782486-44-6 HCAPLUS  
 CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, 1,3,7,13-tetrakis(4-  
 bromophenyl)-5,9,11,15-tetraethyl- (9CI) (CA INDEX NAME)

PAGE 1-A

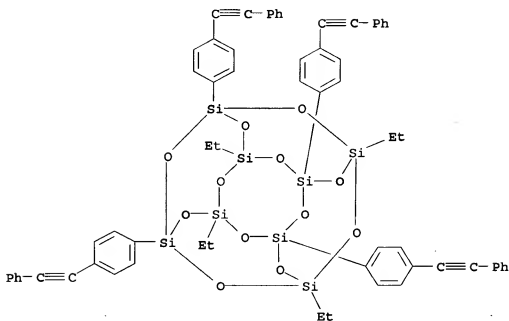


PAGE 2-A



RN 782486-45-7 HCAPLUS  
 CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, 1,3,7,13-tetraethyl-  
 5,9,11,15-tetrakis[4-(phenylethynyl)phenyl]- (9CI) (CA INDEX NAME)

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

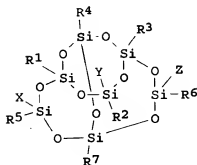


L34 ANSWER 7 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2004:825156 HCAPLUS  
 DN 141:333188  
 TI Insulating film-forming siloxane material and porous  
 insulating film  
 IN Adegawa, Yutaka  
 PA Fuji Photo Film Co., Ltd., Japan  
 SO U.S. Pat. Appl. Publ., 23 pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 FAN.CNT 1

*Application*

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004198855	A1	20041007	US 2004-806450	20040323
	JP 2004319977	A2	20041111	JP 2004-77741	20040318
PRAI	JP 2003-90711	A	20030328		
	JP 2003-95285	A	20030331		
GI	JP 2004-77741	A	20040318		

*Note no Si rings  
 shown - only derivative  
 preparations of starting  
 materials*



I

- AB A polymer having a repeating unit I is used for an insulating film-forming material where I has R1-7 = hydrocarbyl;  $\geq 1$  of X, Y and Z is a specific siloxane group and the remaining 2 each are O or divalent silyl-containing group that bonds to I on the side of the O atom of the group. Possible acetylene modification of the polymers is demonstrated.
- IC ICM C08J009-00
- INCL 521154000; 528010000
- CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 42, 76
- ST silsesquioxane siloxane modified insulating film heat crack resistance
- IT Electric insulators  
(coatings; polysilsesquioxane insulating film)
- IT Heat-resistant materials  
(films; polysilsesquioxane insulating film with good crack resistance and low dielec. constant)
- IT Films  
(heat-resistant; polysilsesquioxane insulating film with good crack resistance and low dielec. constant)
- IT Silsesquioxanes  
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polysiloxane-; polysilsesquioxane insulating film)
- IT Polysiloxanes, uses  
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(silsesquioxane-; polysilsesquioxane insulating film)
- IT 75-77-4DP, Chlorotrimethylsilane, silsesquioxane derivative  
98-12-4DP, Cyclohexyltrichlorosilane, silsesquioxane derivative  
115-21-9DP, Ethyltrichlorosilane, silsesquioxane derivative, siloxane  
501-65-5DP, Diphenylacetylene, reaction products with silsesquioxane siloxane 536-74-3DP, Phenylacetylene, reaction products with silsesquioxane siloxane 1785-61-1DP, 1,3-Diethynylbenzene, reaction products with silsesquioxane siloxane 2401-73-2DP, 1,3-Dichlorotetramethyldisiloxane, silsesquioxane derivative copolymer 9004-74-4DP, Polyethylene glycol methyl ether, reaction products with silsesquioxane siloxane 17886-89-4DP, silsesquioxane derivative, siloxane 18164-08-4DP, silsesquioxane derivative, siloxane  
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polysilsesquioxane insulating film)
- IT 106392-12-5, PE-61

DP =  
derivative  
preparation



RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)

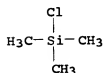
(polysilsesquioxane insulating film)

IT 75-77-4DP, Chlorotrimethylsilane, silsesquioxane derivative  
 98-12-4DP, Cyclohexyltrichlorosilane, silsesquioxane derivative  
 115-21-9DP, Ethyltrichlorosilane, silsesquioxane derivative, siloxane  
 2401-73-2DP, 1,3-Dichlorotetramethyldisiloxane, silsesquioxane  
 derivative copolymer 17886-89-4DP, silsesquioxane derivative, siloxane  
 18164-08-4DP, silsesquioxane derivative, siloxane  
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polysilsesquioxane insulating film)

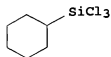
RN 75-77-4 HCAPLUS

CN Silane, chlorotrimethyl- (8CI, 9CI) (CA INDEX NAME)



RN 98-12-4 HCAPLUS

CN Silane, trichlorocyclohexyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



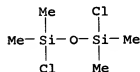
RN 115-21-9 HCAPLUS

CN Silane, trichloroethyl- (8CI, 9CI) (CA INDEX NAME)



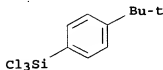
RN 2401-73-2 HCAPLUS

CN Disiloxane, 1,3-dichloro-1,1,3,3-tetramethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



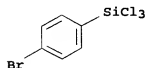
RN 17886-89-4 HCAPLUS

CN Silane, [4-(1,1-dimethylethyl)phenyl]trichloro- (9CI) (CA INDEX NAME)



RN 18164-08-4 HCAPLUS

CN Silane, (4-bromophenyl)trichloro- (9CI) (CA INDEX NAME)



L34 ANSWER 8 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:824792 HCAPLUS

DN 141:341753

TI Composition for forming porous film, porous film and method for forming the same, interlayer insulator film, and semiconductor device

IN Hamada, Yoshitaka; Asano, Takeshi; Nakagawa, Hideo; Sasago, Masaru  
PA Shin-Etsu Chemical Co., Ltd., Japan; Matsushita Electric Industrial Co., Ltd.

SO U.S. Pat. Appl. Publ., 14 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004195660	A1	20041007	US 2004-807494	20040323
	US 6930393	B2	20050816		
	JP 2004292643	A2	20041021	JP 2003-87068	20030327
	CN 1536023	A	20041013	CN 2004-10031387	20040326
PRAI	JP 2003-87068	A	20030327		

OS MARPAT 141:341753

AB The object of the invention is to provide a porous film having the dielectric constant of 2.2 or less and having practicable mech. strength. This invention provides a porous film-forming composition comprising (A) and (B): (A) 100 parts by weight of a hydrolyzable Si compound and/or a product resulting from hydrolysis condensation of Si compound expressed by following formulas (1):  $R_1aSiZ_14-a$  wherein Z1 denotes a hydrolyzable group; R1 denotes a substituted or nonsubstituted monovalent hydrocarbon group; and a denotes an integer of 0 to 3; and (B) 0.1 to 20 parts by weight of a crosslinking agent comprising at least one cyclic oligomer which can generate silanol group(s) by heating and which is expressed by following formula (3):  $\{R_{31}(H)SiO\}_d\{R_{32}(Z_3)SiO\}_e$  wherein R31 and R32 each denotes a substituted or nonsubstituted monovalent hydrocarbon group; Z3 denotes a group which can generate silanol by heating; and each d and e denotes an integer of 0 to 10, and a sum of d and e is greater than or equal to three.

IC ICM H01L021-04

ICS H01L023-48

INCL 257642000; 257758000; 438622000

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 35, 38

ST porous polysiloxane dielec film hydrolysis polymn semiconductor device

IT Silanes  
 RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (alkoxy; composition and method for forming dielec. porous film as interlayer insulator film for semiconductor device)

IT Crosslinking agents  
 Dielectric films  
 Hydrolysis  
 Semiconductor devices  
 (composition and method for forming dielec. porous film as interlayer insulator film for semiconductor device)

IT Silanes  
 RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (composition and method for forming dielec. porous film as interlayer insulator film for semiconductor device)

IT Polysiloxanes, uses  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (composition and method for forming dielec. porous film as interlayer insulator film for semiconductor device)

IT Porous materials  
 (films; composition and method for forming dielec. porous film as interlayer insulator film for semiconductor device)

IT Solvents  
 (organic; composition and method for forming dielec. porous film as interlayer insulator film for semiconductor device)

IT Films  
 (porous; composition and method for forming dielec. porous film as interlayer insulator film for semiconductor device)

IT Oligomers  
 RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)  
 (siloxane; composition and method for forming dielec. porous film as interlayer insulator film for semiconductor device)

IT 67-63-0, Isopropanol, processes 75-65-0, tert-Butanol, processes 78-83-1, Isobutanol, processes 124-41-4, Sodium methylate  
 RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (composition and method for forming dielec. porous film as interlayer insulator film for semiconductor device)

IT 2370-88-9P, 1,3,5,7-Tetramethylcyclotetrasiloxane 212716-32-0P, Tetramethoxysilane-trimethoxysilane copolymer  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PYP (Physical process); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)  
 (composition and method for forming dielec. porous film as interlayer insulator film for semiconductor device)

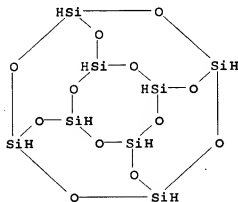
IT 281-50-5P 17082-47-2P 18547-01-8P 773104-95-3P 773104-96-4P 773104-97-5P 773104-98-6P  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)  
 (composition and method for forming dielec. porous film as interlayer insulator film for semiconductor device)

IT 281-50-5P 773104-97-5P

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses) (composition and method for forming dielec. porous film as interlayer insulator film for semiconductor device)

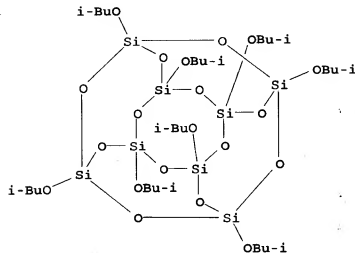
RN 281-50-5 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 773104-97-5 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis(2-methylpropoxy)-(9CI) (CA INDEX NAME)



L34 ANSWER 9 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:816588 HCAPLUS

DN 141:315093

TI Hydroxy-containing T8-silsesquioxane cage compounds and their manufacture

IN Yamahiro, Mikio; Oikawa, Hisao; Ito, Masaya; Tanaka, Masami; Otake,

Nobumasa; Watanabe, Kenichi

PA Chisso Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 90 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004277401	A2	20041007	JP 2003-325176	20030917
	US 2005033077	A1	20050210	US 2003-664151	20030917
PRAI	JP 2002-270430	A	20020917		
	JP 2003-53144	A	20030228		
OS	MARPAT 141:315093				
GI					

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB Title compds. I [R1 = H, (ether-containing) (fluoro)alkyl, (fluoro)alkenyl, (un)substituted aryl, (un)substituted aralkyl; A1 = OH-terminated organic group], useful as thermoplastic modifiers, interlayer insulation films, sealants, coatings, fireproofing agents, etc. (no data), are manufactured from I (A1 = acyloxy-containing organic group). Thus, Ph silsesquioxane Na salt II was treated with Cl<sub>3</sub>SiC<sub>2</sub>H<sub>4</sub>OAc in THF at room temperature for 2 h to give 65.9% I (R1 = Ph, A1 = C<sub>2</sub>H<sub>4</sub>OAc), which was transesterified with MeOH in CHCl<sub>3</sub> in the presence of H<sub>2</sub>SO<sub>4</sub> at room temperature for 72 h to give 91.7% I (R1 = Ph, A1 = C<sub>2</sub>H<sub>4</sub>OH).

IC ICM C07F007-21

ICS C07B061-00

CC 37-2 (Plastics Manufacture and Processing)

Section cross-reference(s): 29

ST hydroxy silsesquioxane cage manuf plastic additive; octasilsesquioxane cage hydroxyethyl manuf transesterification alc; acyloxy silsesquioxane cage manuf transesterification alc

IT Cage compounds  
Siloxanes (nonpolymeric)

RL: IMF (Industrial manufacture); PREP (Preparation)  
(manufacture of hydroxy-containing T8-silsesquioxane cage compds. via acyloxy-containing silsesquioxanes)

IT 118868-51-2P 444315-24-6P 476634-98-7P

656800-10-1P 656800-13-4P 656800-16-7P

757199-15-8P 757199-24-9P 757199-26-1P

RL: IMF (Industrial manufacture); PREP (Preparation)  
(manufacture of hydroxy-containing T8-silsesquioxane cage compds. via acyloxy-containing silsesquioxanes)

IT 465499-97-2P 476635-00-4P 656800-09-8P

656800-11-2P 656800-14-5P 656800-17-8P

660392-75-6P 757198-90-6P 757199-00-1P

757199-03-4P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
(Reactant or reagent)

(manufacture of hydroxy-containing T8-silsesquioxane cage compds. via acyloxy-containing silsesquioxanes)

IT 429-60-7 2996-92-1, Phenyltrimethoxysilane 5290-25-5 17865-54-2,  
Cyclohexyltrimethoxysilane 18204-80-3, 2-Acetoxyethyltrichlorosilane  
18395-30-7, Isobutyltrimethoxysilane 51851-37-7, Tridecafluoro-1,1,2,2-  
tetrahydrooctyltriethoxysilane 143487-47-2, Cyclopentyltrimethoxysilane  
444315-26-8

RL: RCT (Reactant); RACT (Reactant or reagent)

(manufacture of hydroxy-containing T8-silsesquioxane cage compds. via acyloxy-containing silsesquioxanes)

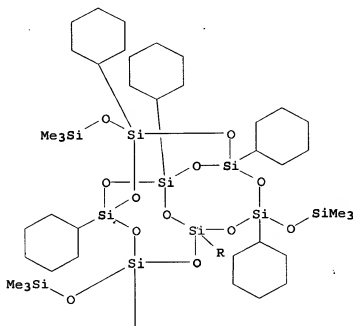
IT 41087-22-3P, Phenyltrichlorosilane homopolymer  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
(oligomeric; manufacture of hydroxy-containing T8-silsesquioxane cage compds. via acyloxy-containing silsesquioxanes)

IT 118868-51-2P 444315-24-6P 476634-98-7P  
656800-10-1P 656800-13-4P 656800-16-7P  
757199-15-8P 757199-24-9P 757199-26-1P  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(manufacture of hydroxy-containing T8-silsesquioxane cage compds. via acyloxy-containing silsesquioxanes)

RN 118868-51-2 HCAPLUS

CN Tricyclo[7.3.3.15,11]heptasiloxane, 1,3,5,7,9,11,14-heptacyclohexyl-3,7,14-tris[(trimethylsilyl)oxy]-, stereoisomer (9CI) (CA INDEX NAME)

PAGE 1-A

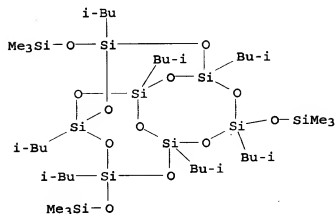


PAGE 2-A



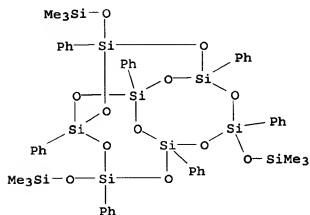
RN 444315-24-6 HCAPLUS

CN Tricyclo[7.3.3.15,11]heptasiloxane, 1,3,5,7,9,11,14-heptakis(2-methylpropyl)-3,7,14-tris[(trimethylsilyl)oxy]- (9CI) (CA INDEX NAME)



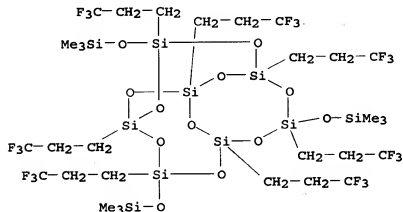
RN 476634-98-7 HCAPLUS

CN Tricyclo[7.3.3.15,11]heptasiloxane, 1,3,5,7,9,11,14-heptaphenyl-3,7,14-tris[(trimethylsilyl)oxy]- (9CI) (CA INDEX NAME)



RN 656800-10-1 HCAPLUS

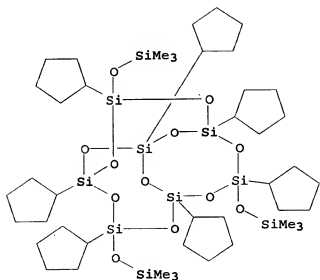
CN Tricyclo[7.3.3.15,11]heptasiloxane, 1,3,5,7,9,11,14-heptakis(3,3,3-trifluoropropyl)-3,7,14-tris[(trimethylsilyl)oxy]- (9CI) (CA INDEX NAME)



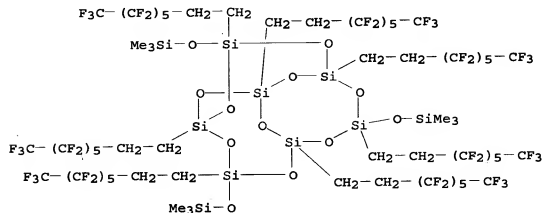
RN 656800-13-4 HCAPLUS

CN Tricyclo[7.3.3.15,11]heptasiloxane, 1,3,5,7,9,11,14-heptacyclopentyl-3,7,14-tris[(trimethylsilyl)oxy]- (9CI) (CA INDEX NAME)

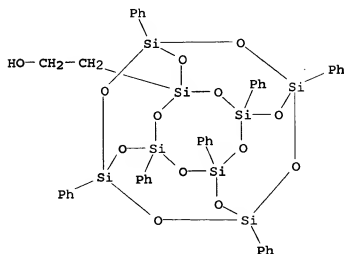




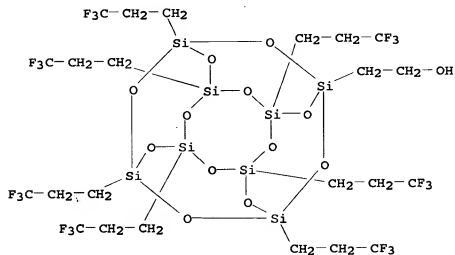
RN 656800-16-7 HCAPLUS  
 CN Tricyclo[7.3.3.15,11]heptasiloxane, 1,3,5,7,9,11,14-heptakis(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)-3,7,14-tris[(trimethylsilyl)oxy]- (9CI) (CA INDEX NAME)



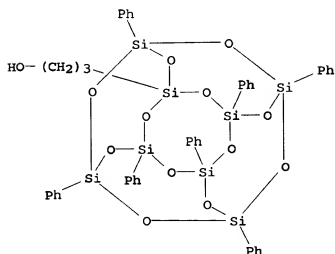
RN 757199-15-8 HCAPLUS  
 CN Pentacyclo[9.5.1.13,9.15.15.17,13]octasiloxaneethanol, 3,5,7,9,11,13,15-heptaphenyl- (9CI) (CA INDEX NAME)



RN 757199-24-9 HCAPLUS  
 CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxaneethanol,  
 3,5,7,9,11,13,15-heptakis(3,3,3-trifluoropropyl)- (9CI) (CA INDEX NAME)



RN 757199-26-1 HCAPLUS  
 CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxanepropanol,  
 3,5,7,9,11,13,15-heptaphenyl- (9CI) (CA INDEX NAME)

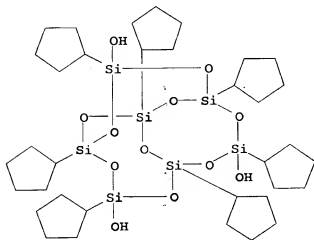


IT 465499-97-2P 476635-00-4P 656800-09-8P  
 656800-11-2P 656800-14-5P 656800-17-8P  
 660392-75-6P 757198-90-6P 757199-00-1P  
 757199-03-4P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (manufacture of hydroxy-containing T8-silsesquioxane cage compds. via  
 acyloxy-containing silsesquioxanes)

RN 465499-97-2 HCAPLUS

CN Tricyclo[7.3.3.15,11]heptasiloxane-3,7,14-triol, 1,3,5,7,9,11,14-  
 heptacyclopentyl-, trisodium salt (9CI) (CA INDEX NAME)

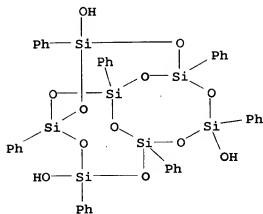


● 3 Na

RN 476635-00-4 HCAPLUS

CN Tricyclo[7.3.3.15,11]heptasiloxane-3,7,14-triol, 1,3,5,7,9,11,14-  
 heptaphenyl-, trisodium salt (9CI) (CA INDEX NAME)

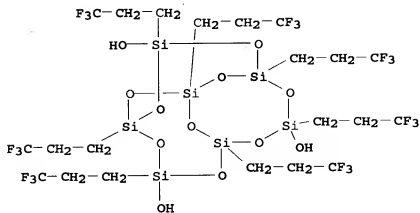
KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505



●3 Na

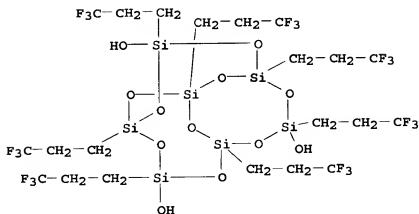
RN 656800-09-8 HCAPLUS

CN Tricyclo[7.3.3.15,11]heptasiloxane-3,7,14-triol, 1,3,5,7,9,11,14-heptakis(3,3,3-trifluoropropyl)- (9CI) (CA INDEX NAME)



RN 656800-11-2 HCAPLUS

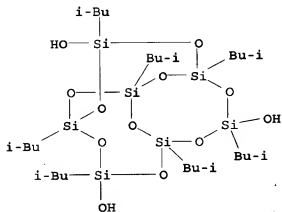
CN Tricyclo[7.3.3.15,11]heptasiloxane-3,7,14-triol, 1,3,5,7,9,11,14-heptakis(3,3,3-trifluoropropyl)-, trisodium salt (9CI) (CA INDEX NAME)



●3 Na

RN 656800-14-5 HCAPLUS

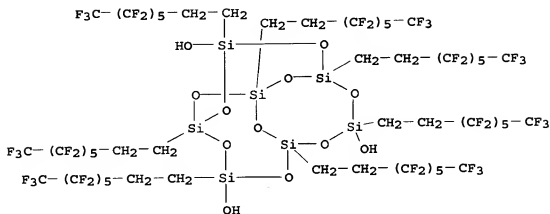
CN Tricyclo[7.3.3.15,11]heptasiloxane-3,7,14-triol, 1,3,5,7,9,11,14-heptakis(2-methylpropyl)-, trisodium salt (9CI) (CA INDEX NAME)



●3 Na

RN 656800-17-8 HCAPLUS

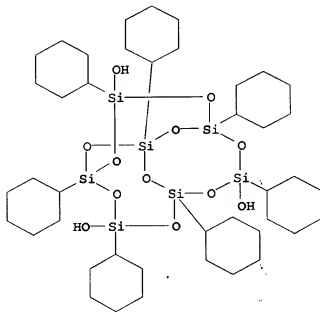
CN Tricyclo[3.3.3.15,11]heptasiloxane-3,7,14-triol, 1,3,5,7,9,11,14-heptakis(3,3,4,4,5,5,6,6,6,7,7,8,8,8-tridecafluorooctyl)-, trisodium salt (9CI) (CA INDEX NAME)



● 3 Na

RN 660392-75-6 HCAPLUS

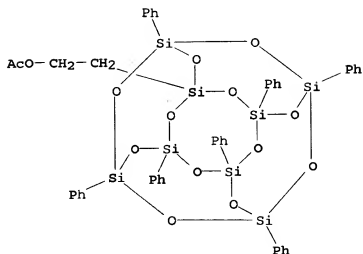
CN Tricyclo[7.3.3.15,11]heptasiloxane-3,7,14-triol, 1,3,5;7,9,11,14-heptacyclohexyl-, trisodium salt (9CI) (CA INDEX NAME)



● 3 Na

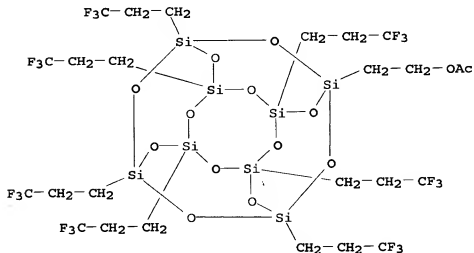
RN 757198-90-6 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxaneethanol, 3,5,7,9,11,13,15-heptaphenyl-, acetate (9CI) (CA INDEX NAME)



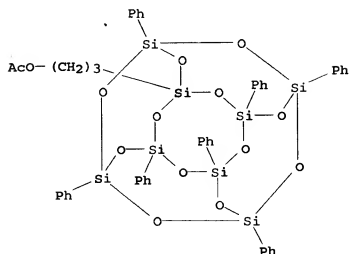
RN 757199-00-1 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxaneethanol,  
3,5,7,9,11,13,15-heptakis(3,3,3-trifluoropropyl)-, acetate (9CI) (CA  
INDEX NAME)



RN 757199-03-4 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxanepropanol,  
3,5,7,9,11,13,15-heptaphenyl-, acetate (9CI) (CA INDEX NAME)

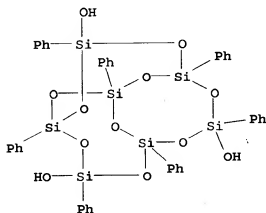


IT 444315-26-8

RL: RCT (Reactant); RACT (Reactant or reagent)  
(manufacture of hydroxy-containing T8-silsesquioxane cage compds. via  
acyloxy-containing silsesquioxanes)

RN 444315-26-8 HCAPLUS

CN Tricyclo[7.3.3.15,11]heptasiloxane-3,7,14-triol, 1,3,5,7,9,11,14-  
heptaphenyl- (9CI) (CA INDEX NAME)



L34 ANSWER 10 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:271699 HCAPLUS

DN 140:304977

TI Heat-resistant polymer compositions and their electrically insulating  
materials

IN Fujiwara, Takenori; Goto, Kazuki; Tomikawa, Masao

PA Toray Industries, Inc., Japan

SO Jpn. Kokai Tokkyo Koho, 36 pp.

CODEN: JKXXAF

DT Patent

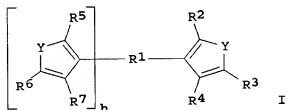
LA Japanese

FAN.CNT 1

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505



	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004099888	A2	20040402	JP 2003-298347	20030822
PRAI	JP 2002-241898	A	20020822		
GI					



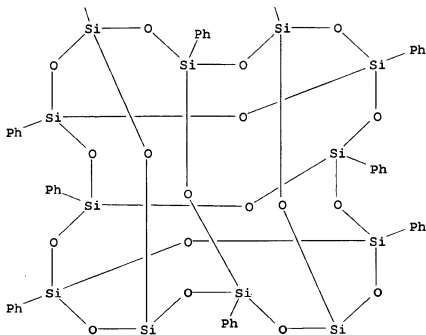
- AB The compns., useful for interlayer insulating films, comprise (a) I [Y = SO<sub>2</sub>, SO, S, NR<sub>8</sub>, SiR<sub>9</sub>R<sub>10</sub>, CO; R<sub>1</sub> = aromatic group with valence (h + 1), single bond; R<sub>2</sub>-R<sub>10</sub> = H, C<sub>1</sub>-30 alkyl, aromatic group; h = 0-6], (b) cyclic acetylene compds., and (c) organic solvents. Thus, reaction of 6.90 g 3,3'-(1,4-phenylene)bis(2,4,5-triphenylcyclopentadienone) and 3 g cyclic (1,3-C<sub>6</sub>H<sub>4</sub>C.tpbond.C)6 in 60 g N-methylpyrrolidone gave a copolymer (Mw 3400), which was filtered and applied on a Si wafer to give a coating with 5% weight loss temperature 560°.
- IC ICM C08L065-00  
ICS C08G061-00; H01B003-30
- CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 25, 29, 76
- ST heat resistance interlayer insulator film cyclic acetylene cyclopentadienone; phenylene phenylcyclopentadienone; cyclic acetylene polymer insulator
- IT Dielectric films  
Electric insulators  
Heat-resistant materials  
(heat-resistant polymer compns. useful for interlayer insulating films with good crack resistance)
- IT Polyacetylenes, preparation  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(heat-resistant polymer compns. useful for interlayer insulating films with good crack resistance)
- IT Silsesquioxanes  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(polyhedral, acetylene-containing; heat-resistant polymer compns. useful for interlayer insulating films with good crack resistance)
- IT 18923-59-6DP, Dodeca(phenylsilasesquioxane), brominated, reaction products with phenylacetylene, polymers with cyclopentadienone derivs.  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(Mol. Silicas MS 0802; heat-resistant polymer compns. useful for interlayer insulating films with good crack resistance)
- IT 5256-79-1DP, Octaphenylsilasesquioxane, brominated, reaction products with phenylacetylene, polymers with cyclopentadienone derivs.  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(Mol. Silicas MS 0840; heat-resistant polymer compns. useful for interlayer insulating films with good crack resistance)
- IT 536-74-3DP, Phenylacetylene, reaction products with brominated

silsesquioxanes, polymers with cyclopentadienone derivs. 3432-73-3DP,  
3,3'-(1,4-Phenylene)bis(2,4,5-triphenylcyclopentadienone), reaction  
products with acetylene-containing silsesquioxanes 13092-45-ODP,  
3,3'-(Oxydi-p-phenylene)bis(2,4,5-triphenylcyclopentadienone), reaction  
products with acetylene-containing silsesquioxanes 675837-35-1P  
675837-36-2P 675837-39-5P 675837-41-9P  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(heat-resistant polymer compns. useful for interlayer  
insulating films with good crack resistance)  
IT 53273-19-1P 144001-00-3P 144001-01-4P 144001-05-8P 675837-31-7P  
675837-32-8P 675837-33-9P 675837-34-0P  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
(Reactant or reagent)  
(heat-resistant polymer compns. useful for interlayer  
insulating films with good crack resistance)  
IT 108-36-1, 1,3-Dibromobenzene 109-89-7, Diethylamine, reactions  
591-19-5, m-Bromoaniline 1066-54-2, Trimethylsilylacetylene  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(heat-resistant polymer compns. useful for interlayer  
insulating films with good crack resistance)  
IT 18923-59-6DP, Dodeca(phenylsilasesquioxane), brominated, reaction  
products with phenylacetylene, polymers with cyclopentadienone derivs.  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(Mol. Silicas MS 0802; heat-resistant polymer compns. useful for  
interlayer insulating films with good crack  
resistance)  
RN 18923-59-6 HCAPLUS  
CN Heptacyclo[11.11.1.13,9.15,21.17,19.111,17.115,23]dodecasiloxane,  
dodecaphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A

Ph  
/Ph  
/

PAGE 2-A

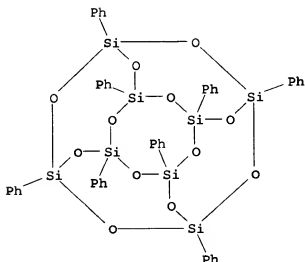


PAGE 3-A

Ph

Ph

IT 5256-79-1DP, Octaphenylsilsesquioxane, brominated, reaction products with phenylacetylene, polymers with cyclopentadienone derivs.  
 RL: IMP (Industrial manufacture); PREP (Preparation)  
 (Mol. Silicas MS 0840; heat-resistant polymer compns. useful for interlayer insulating films with good crack resistance)  
 RN 5256-79-1 HCAPLUS  
 CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octaphenyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



L34 ANSWER 11 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:261039 HCAPLUS

DN 138:272383

TI Siloxane-based resin and forming insulating film  
between interconnect layers in semiconductor devices by using the  
polysiloxane

IN Lyu, Yi Yeol; Yim, Jin Heong; Mah, Sang Kook; Nah, Eun Ju; Hwang, Il Sun;  
Jeong, Hyun Dam; Kim, Jung Hyung

PA S. Korea

SO U.S. Pat. Appl. Publ., 16 pp., Cont.-in-part of U.S. Ser. No. 895,158.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003065123	A1	20030403	US 2002-105723	20020327
	US 6623711	B2	20030923		
	KR 2002075669	A	20021005	KR 2001-15884	20010327
	US 2002098279	A1	20020725	US 2001-895158	20010702
	US 6660822	B2	20031209		
	KR 2003024002	A	20030326	KR 2001-56798	20010914
	US 2004024164	A1	20040205	US 2003-621380	20030718
	US 7019099	B2	20060328		
	PRAI KR 2001-15884	A	20010327		
	US 2001-895158	A2	20010702		
OS	KR 2001-56798	A	20010914		
	KR 2000-71645	A	20001129		
	US 2002-105723	A1	20020327		
	MARPAT 138:272383				
AB	Siloxane-based resins are prepared by hydrolyzing and polycondensing cyclic and/or cage-shape siloxane compds., optionally with $\geq 1$ silane compound, in an organic solvent in the presence of a catalyst and H <sub>2</sub> O. Insulating films are formed between interconnect layers in semiconductor devices by using the siloxane-based resin low dielec. insulating materials.				
IC	ICM C08G077-04				
INCL	528033000; X52-8 3.7				

CC : 37-3 (Plastics Manufacture and Processing)  
 Section cross-reference(s): 76

ST dielec insulating material semiconductor; low k dielec coating film cage  
 silsesquioxane copolymer compn

IT Silsesquioxanes  
 RL: IMF (Industrial manufacture); PRP (Properties); RCT (Reactant); TEM  
 (Technical or engineered material use); PREP (Preparation); RACT (Reactant  
 or reagent); USES (Uses)  
 (polysiloxane-, silicate-containing spin-on glass precursor; siloxane-based  
 resins forming **insulating film** between  
 interconnecting layers in wafers by the spin-on coating process)

IT Polysiloxanes, preparation  
 Silsesquioxanes  
 RL: IMF (Industrial manufacture); PRP (Properties); RCT (Reactant); TEM  
 (Technical or engineered material use); PREP (Preparation); RACT (Reactant  
 or reagent); USES (Uses)  
 (silicate-containing spin-on glass precursor; siloxane-based resins forming  
**insulating film** between interconnecting layers in  
 wafers by the spin-on coating process)

IT Dielectric films  
 Electric insulators  
 Semiconductor devices  
 (siloxane-based resins forming **insulating film**  
 between interconnecting layers in wafers by the spin-on coating  
 process)

IT Polysiloxanes, preparation  
 RL: IMF (Industrial manufacture); PRP (Properties); RCT (Reactant); TEM  
 (Technical or engineered material use); PREP (Preparation); RACT (Reactant  
 or reagent); USES (Uses)  
 (silsesquioxane-, silicate-containing spin-on glass precursor;  
 siloxane-based resins forming **insulating film**  
 between interconnecting layers in wafers by the spin-on coating  
 process)

IT 188593-65-9P  
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (intermediate; manufacture of siloxane compns. containing cyclodextrin  
 derivs.  
 as porogens for forming **insulation films** with low  
 dielec. constant)

IT 93236-49-8P 439086-66-5P 463962-09-6P 463962-10-9P  
 463962-11-0P  
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (monomer; manufacture of siloxane compns. containing cyclodextrin derivs. as  
 porogens for forming **insulation films** with low  
 dielec. constant)

IT 55216-11-0  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (porogen; manufacture of siloxane compns. containing cyclodextrin derivs. as  
 porogens for forming **insulation films** with low  
 dielec. constant)

IT 214675-88-4P  
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (reactant; manufacture of siloxane compns. containing cyclodextrin derivs.  
 as  
 porogens for forming **insulation films** with low  
 dielec. constant)

IT 67-56-1, Methanol, reactions 2370-88-9, 2,4,6,8-

Tetramethylcyclotetrasiloxane 2554-06-5, 2,4,6,8-Tetramethyl-2,4,6,8-tetramethylcyclotetrasiloxane 10025-78-2, Trichlorosilane 52217-57-9, 7-Octenyltrimethoxysilane 243146-51-2 314727-18-9  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reactant; manufacture of siloxane compns. containing cyclodextrin derivs.

as

porogens for forming insulation films with low dielec. constant)

IT 463962-12-1P 463962-13-2P 463962-14-3P

463962-15-4P 463962-16-5P 463962-17-6P

463962-18-7P 463962-19-8P 463962-20-1P 463962-21-2P

RL: IMF (Industrial manufacture); PRP (Properties); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(spin-on glass precursor; siloxane-based resins forming insulating film between interconnecting layers in wafers by the spin-on coating process)

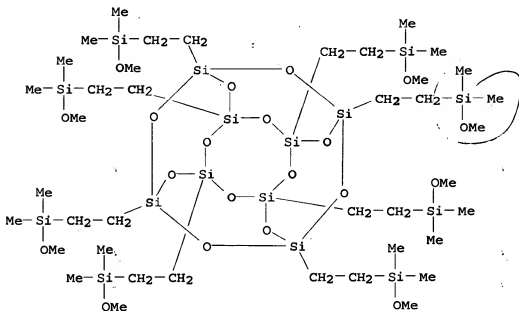
IT 463962-09-6P 463962-10-9P 463962-11-0P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(monomer; manufacture of siloxane compns. containing cyclodextrin derivs. as porogens for forming insulation films with low dielec. constant)

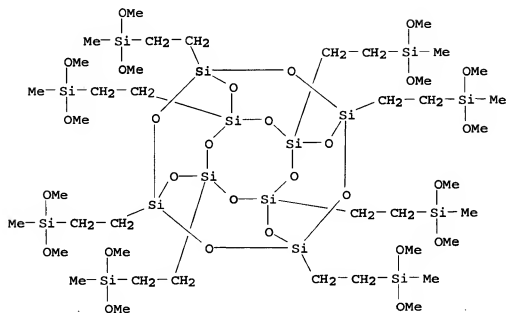
RN 463962-09-6 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(methoxydimethylsilyl)ethyl]- (9CI) (CA INDEX NAME)



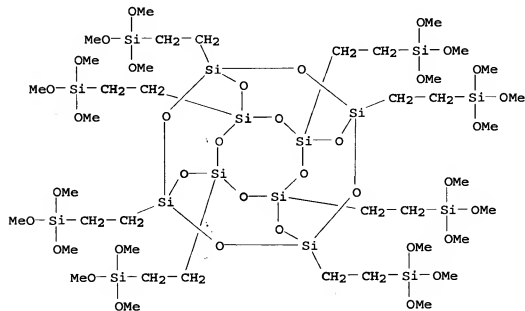
RN 463962-10-9 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(dimethoxymethylsilyl)ethyl]- (9CI) (CA INDEX NAME)



RN 463962-11-0 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(trimethoxysilyl)ethyl]- (9CI) (CA INDEX NAME)



IT 214675-88-4P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

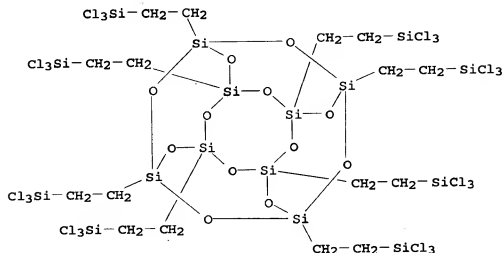
(reactant; manufacture of siloxane compns. containing cyclodextrin derivs.

as

porogens for forming insulation films with low

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

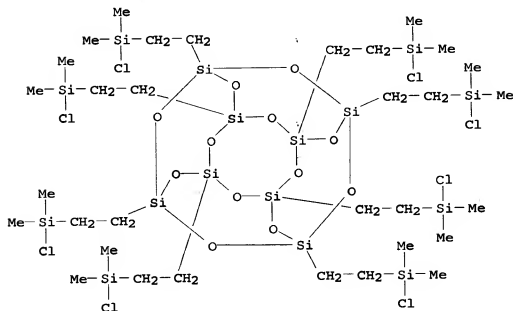
dielec. constant)  
 RN 214675-88-4 HCAPLUS  
 CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(trichlorosilyl)ethyl]- (9CI) (CA INDEX NAME)



IT 243146-51-2 314727-18-9  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reactant; manufacture of siloxane comps. containing cyclodextrin derivs.)

as porogens for forming **insulation films** with low dielec. constant)

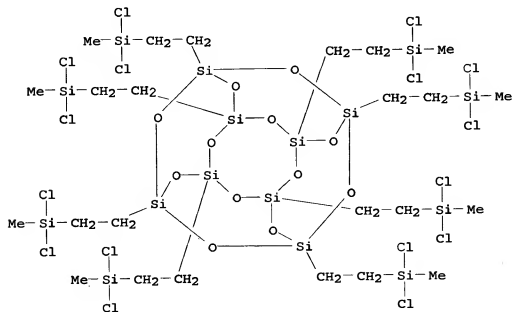
RN 243146-51-2 HCAPLUS  
 CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(chlorodimethylsilyl)ethyl]- (9CI) (CA INDEX NAME)





RN 314727-18-9 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(dichloromethylsilyl)ethyl]- (9CI) (CA INDEX NAME)



IT 463962-12-1P 463962-13-2P 463962-14-3P

463962-15-4P 463962-16-5P 463962-17-6P

463962-20-1P 463962-21-2P

RL: IMF (Industrial manufacture); PRP (Properties); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(spin-on glass precursor; siloxane-based resins forming insulating film between interconnecting layers in wafers by the spin-on coating process)

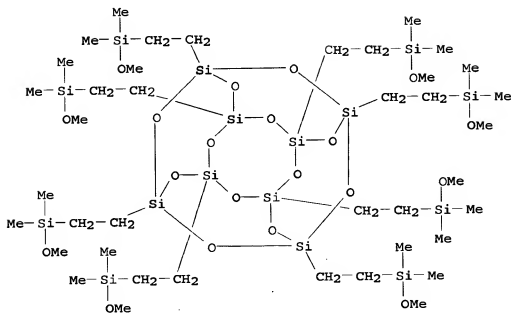
RN 463962-12-1 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(methoxydimethylsilyl)ethyl]-, polymer with 2,4,6,8-tetramethyl-2,4,6,8-tetrakis[2-(trimethoxysilyl)ethyl]cyclotetrasiloxane (9CI) (CA INDEX NAME)

CM 1

CRN 463962-09-6

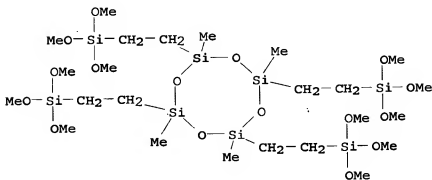
CMF C40 H104 O20 Si16



CM 2

CRN 93236-49-8

CMF C24 H64 O16 Si8



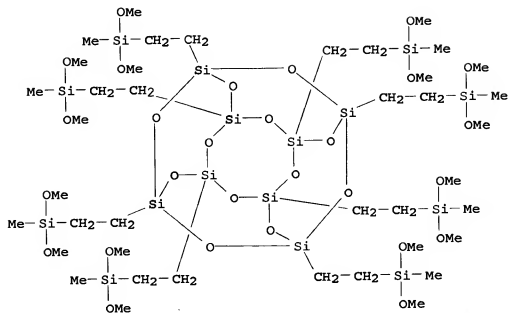
RN 463962-13-2 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(dimethoxymethylsilyl)ethyl]-, polymer with 2,4,6,8-tetrakis[2-(trimethoxysilyl)ethyl]cyclotetrasiloxane (9CI) (CA INDEX NAME)

CM 1

CRN 463962-10-9

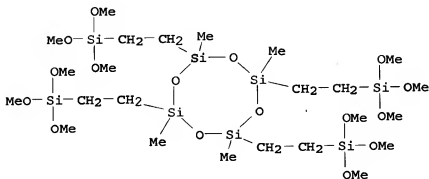
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CM 2

CRN 93236-49-8

CMF C24 H64 O16 Si8



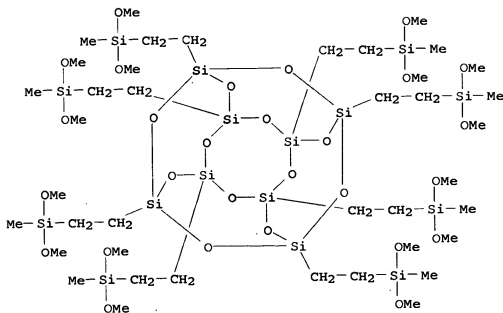
RN 463962-14-3 HCAPLUS

CN Pentacyclo[9.5.1.13.9.15.15.17.13]octasiloxane, octakis[2-(dimethoxymethylsilyl)ethyl]-, polymer with 2,4,6,8-tetramethyl-2,4,6,8-tetrakis[8-(trimethoxysilyl)octyl]cyclotetrasiloxane (9CI) (CA INDEX NAME)

CM 1

CRN 463962-10-9

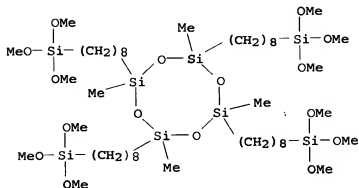
CMF C40 H104 O28 Si16



CM 2

CRN 439086-66-5

CMF C48 H112 O16 Si8



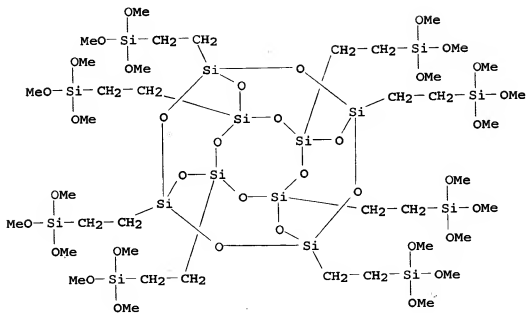
RN 463962-15-4 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(trimethoxysilyl)ethyl]-, polymer with 2,4,6,8-tetrakis[2-(trimethoxysilyl)ethyl]cyclotetrasiloxane (9CI) (CA INDEX NAME)

CM 1

CRN 463962-11-0

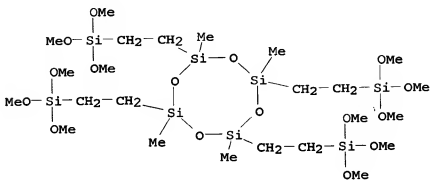
CMF C40 H104 O36 Si16



CM 2

CRN 93236-49-8

CMF C24 H64 O16 Si8



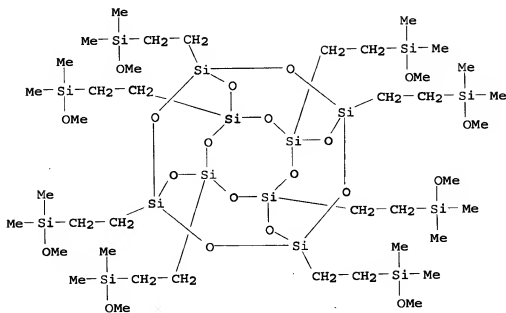
RN 463962-16-5 HCAPLUS

CN Silicic acid (H4SiO4), tetramethyl ester, polymer with octakis[2-(methoxydimethylsilyl)ethyl]pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane and 2,4,6,8-tetramethyl-2,4,6,8-tetrakis[2-(trimethoxysilyl)ethyl]cyclotetrasiloxane (9CI) (CA INDEX NAME)

CM 1

CRN 463962-09-6

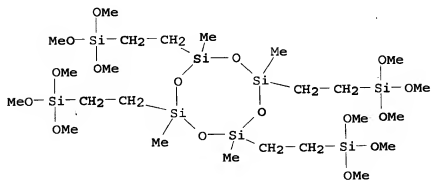
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CM 2

CRN 93236-49-8

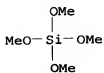
CMF C24 H64 O16 Si8



CM 3

CRN 681-84-5

CMF C4 H12 O4 Si

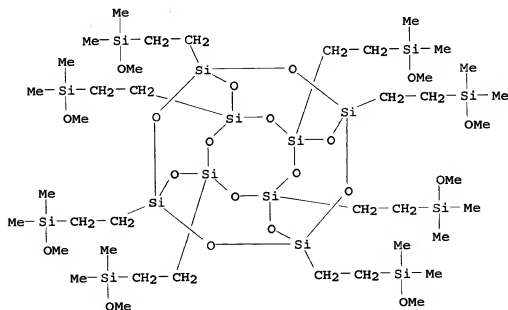


RN 463962-17-6 HCAPLUS  
 CN Silicic acid (H<sub>4</sub>SiO<sub>4</sub>), tetramethyl ester, polymer with  
 octakis[2-(methoxydimethylsilyl)ethyl]pentacyclo[9.5.1.13,9.15,15.17,13]oc-  
 tasiloxane, 2,4,6,8-tetramethyl-2,4,6,8-tetrakis[2-  
 (trimethoxysilyl)ethyl]cyclotetrasiloxane and trimethoxymethylsilane (9CI)  
 (CA INDEX NAME)

CM 1

CRN 463962-09-6

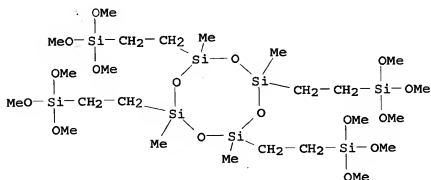
CMF C40 H104 O20 Si16



CM 2

CRN 93236-49-8

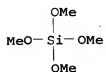
CMF C24 H64 O16 Si8



CM 3

CRN 1185-55-3  
CMF C4 H12 O3 Si

CM 4

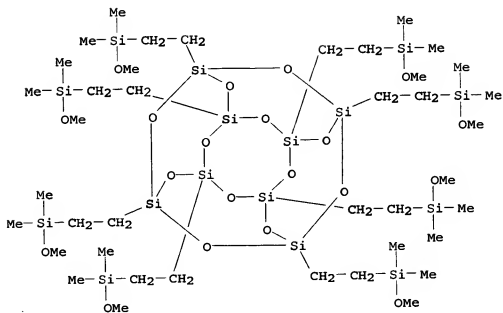
CRN 681-84-5  
CMF C4 H12 O4 Si

RN 463962-20-1 HCAPLUS  
CN Pentacyclo[9.5.1.1.13,9.15,15.17,13]octasiloxane, octakis[2-(methoxydimethylsilyl)ethyl]-, polymer with trimethoxymethylsilane (9CI)  
(CA INDEX NAME)

CM 1

CRN 463962-09-6  
CMF C40 H104 O20 Si16





CM 2

CRN 1185-55-3

CMF C4 H12 O3 Si



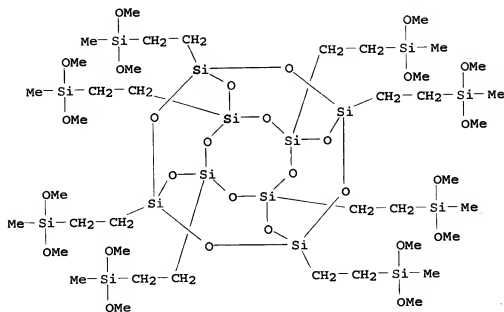
RN 463962-21-2 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(dimethoxymethylsilyl)ethyl]-, polymer with trimethoxymethylsilane (9CI)  
(CA INDEX NAME)

CM 1

CRN 463962-10-9

CMF C40 H104 O28 Si16



CM 2

CRN 1185-55-3

CMF C4 H12 O3 Si



L34 ANSWER 12 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:222346 HCAPLUS

DN 138:256030

TI Composition for preparing substances having nano-pores

IN Yim, Jin Heong; Lyu, Yi Yeol; Mah, Sang Kook; Nah, Eun Ju; Hwang, Il Sun;

Yoon, Keun Byoung

PA Samsung Electronics Co., Ltd., S. Korea

SO U.S. Pat. Appl. Publ., 13 pp., Cont.-in-part of U.S. Ser. No. 918,432.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003055134	A1	20030320	US 2001-961449	20010925
	US 6632748	B2	20031014		
PRAI	KR 2001-15883	A	20010327		
	US 2001-918432	A2	20010801		
OS	MARPAT 138:256030				
AB	The present invention provides a composition for preparing substances having				

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nano-pores, the composition comprising cyclodextrin derivative, thermo-stable organic

or inorg. matrix precursor (e.g., a cyclosiloxane or silsesquioxane), and solvent for dissolving the two solid components. The nanoporous substances are useful as an interlayer insulating films having evenly distributed nano-pores with a diameter less than 50 Å, which is required for semiconductor devices.

IC ICM C08J003-00

INCL 524048000

CC 37-6 (Plastics Manufacture and Processing)

ST cyclodextrin porogen thermostable silicon polymer

IT Cyclosiloxanes

Silsesquioxanes

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(composition for preparing substances having nano-pores)

IT 188593-65-9P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(composition for preparing substances having nano-pores)

IT 439086-68-7P 463962-12-1P 464175-07-3P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(composition for preparing substances having nano-pores)

IT 67-56-1, Methanol, reactions 2554-06-5, 2,4,6,8-Tetramethyl-2,4,6,8-tetravinylcyclotetrasiloxane 10025-78-2, Trichlorosilane

RL: RCT (Reactant); RACT (Reactant or reagent)

(composition for preparing substances having nano-pores)

IT 93236-49-8P 463962-09-6P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(monomer; composition for preparing substances having nano-pores)

IT 12619-70-4D, Cyclodextrin, derivative 55216-11-0

RL: TEM (Technical or engineered material use); USES (Uses)

(porogen; composition for preparing substances having nano-pores)

IT 463962-12-1P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(composition for preparing substances having nano-pores)

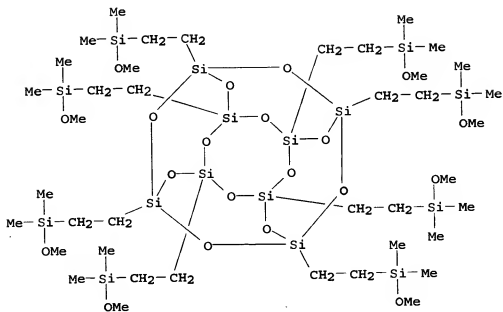
RN 463962-12-1 HCAPLUS

CN Pentacyclo[9.5.1.13.9.15.15.17.13]octasiloxane, octakis[2-(methoxydimethylsilyl)ethyl]-, polymer with 2,4,6,8-tetramethyl-2,4,6,8-tetrakis[2-(trimethoxysilyl)ethyl]cyclotetrasiloxane (9CI) (CA INDEX NAME)

CM 1

CRN 463962-09-6

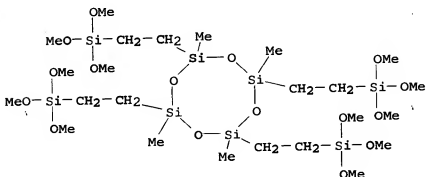
CMF C40 H104 O20 Si16



CM 2

CRN 93236-49-8

CMF C24 H64 O16 Si8

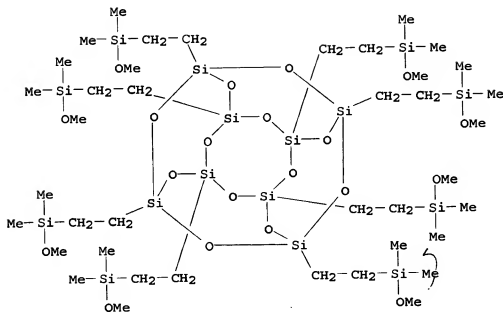


IT 463962-09-6P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
(monomer; composition for preparing substances having nano-pores)

RN 463962-09-6 HCAPLUS

CN Pentacyclo[9.5.1.13.9.15.15.17.13]octasiloxane, octakis[2-(methoxydimethylsilyl)ethyl]- (9CI) (CA INDEX NAME)



L34 ANSWER 13 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2002:752353 HCAPLUS

DN 137:263770

TI Siloxane-based resin and method for forming an insulating film between interconnecting layers in wafers

IN Lyu, Yi Yeol; Yim, Jin Heong; Jeong, Hyun Dam; Kim, Jung Hyung; Mah, Sang Kook; Nah, Eun Ju; Hwang, Sun Il

PA Samsung Electronics Co., Ltd., S. Korea

SO Eur. Pat. Appl., 27 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1245642	A1	20021002	EP 2002-251958	20020319
	EP 1245642	B1	20050608		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	KR 2002075669	A	20021005	KR 2001-15884	20010327
	KR 2003024002	A	20030326	KR 2001-56798	20010914
	JP 2002363285	A2	20021218	JP 2002-89759	20020327
	JP 3739331	B2	20060125		
PRAI	KR 2001-15884	A	20010327		
	KR 2001-56798	A	20010914		

OS MARPAT 137:263770

AB Disclosed herein are siloxane-based resins prepared by hydrolyzing and polycondensing cyclic and/or cage-shape siloxane compds., optionally with at least one silane compound, in an organic solvent in the presence of a catalyst and water. Also, disclosed herein are methods for forming insulating film between interconnect layers in semiconductor devices by using the siloxane-based resins thus prepared as low dielec. insulating materials. Thus, hydrosilylating 2,4,6,8-tetramethyl-2,4,6,8-tetravinylcyclotetrasiloxane with

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trichlorosilane, followed by reacting the resulting derivative with MeOH gave 2,4,6,8-tetramethyl-2,4,6,8-tetra(trimethoxysilylethyl)cyclotetrasiloxane (I). Copolymer of I with octa(2-trimethoxysilylethyl)octasilsesquioxane gave a copolymer for use in formation of a spin-coat dielectric layer with low k.

IC ICM C08L083-04  
ICS C08J009-26; H01B003-46; H01L021-316; H01L021-312

CC 37-3 (Plastics Manufacture and Processing)  
Section cross-reference(s): 76

ST low k dielectric coating film cage silsesquioxane copolymer compn

IT Dielectric films  
Electric insulators  
Semiconductor devices  
(manufacture of siloxane-based resins for forming insulating film between interconnecting layers in wafers by the spin-on coating process)

IT Silsesquioxanes  
RL: IMF (Industrial manufacture); PRP (Properties); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
(polysiloxane-, silicate-containing spin-on glass precursor; manufacture of siloxane-based resins for forming insulating film between interconnecting layers in wafers by the spin-on coating process)

IT Polysiloxanes, preparation  
Silsesquioxanes  
RL: IMF (Industrial manufacture); PRP (Properties); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
(silicate-containing spin-on glass precursor; manufacture of siloxane-based resins for forming insulating film between interconnecting layers in wafers by the spin-on coating process)

IT Polysiloxanes, preparation  
RL: IMF (Industrial manufacture); PRP (Properties); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
(silsesquioxane-, silicate-containing spin-on glass precursor; manufacture of siloxane-based resins for forming insulating film between interconnecting layers in wafers by the spin-on coating process)

of 188593-65-9P  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
(intermediate; manufacture of siloxane compns. containing cyclodextrin derivs. as porogens for forming insulation films with low dielectric constant)

IT 93236-49-8P 439086-66-5P 463962-09-6P 463962-10-9P 463962-11-0P  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
(monomer; manufacture of siloxane compns. containing cyclodextrin derivs. as porogens for forming insulation films with low dielectric constant)

IT 214675-88-4P  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
(reactant; manufacture of siloxane compns. containing cyclodextrin derivs. as

porogens for forming insulation films with low dielec. constant)

IT 67-56-1, Methanol, reactions 2370-88-9, 2,4,6,8-Tetramethylcyclotetrasiloxane 2554-06-5, 2,4,6,8-Tetramethyl-2,4,6,8-tetravinylcyclotetrasiloxane 10025-78-2, Trichlorosilane 52217-57-9, 7-Octenyltrimethoxysilane 243146-51-2 314727-18-9

RL: RCT (Reactant); RACT (Reactant or reagent)

as (reactant; manufacture of siloxane compns. containing cyclodextrin derivs.

porogens for forming insulation films with low dielec. constant)

IT 463962-12-1P 463962-13-2P 463962-14-3P 463962-15-4P 463962-16-5P 463962-17-6P 463962-18-7P 463962-19-8P 463962-20-1P 463962-21-2P

RL: IMF (Industrial manufacture); PRP (Properties); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(spin-on glass precursor; manufacture of siloxane-based resins for forming insulating film between interconnecting layers in wafers by the spin-on coating process)

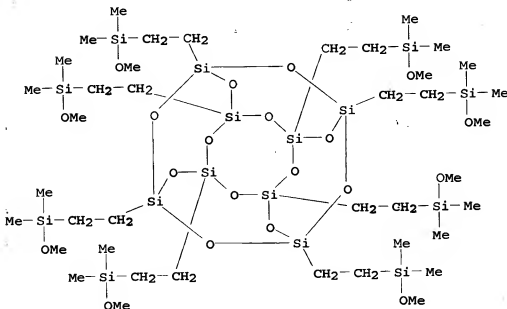
IT 463962-09-6P 463962-10-9P 463962-11-0P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(monomer; manufacture of siloxane compns. containing cyclodextrin derivs. as porogens for forming insulation films with low dielec. constant)

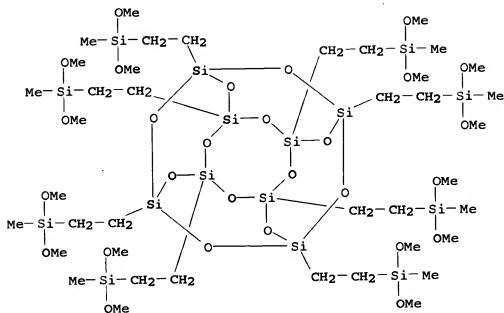
RN 463962-09-6 HCAPLUS

CN Pentacyclo[9.5.1.1.3,9.15,15.17,13]octasiloxane, octakis[2-(methoxydimethylsilyl)ethyl]- (9CI) (CA INDEX NAME)

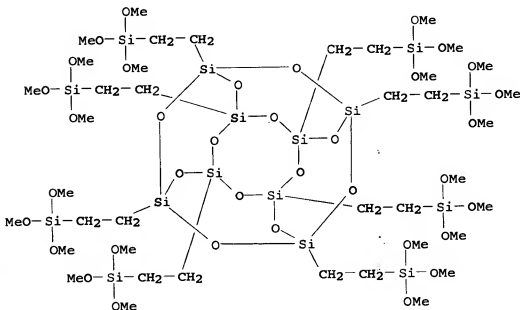


RN 463962-10-9 HCAPLUS

CN Pentacyclo[9.5.1.1.3,9.15,15.17,13]octasiloxane, octakis[2-(dimethoxymethylsilyl)ethyl]- (9CI) (CA INDEX NAME)



RN 463962-11-0 HCAPLUS  
 CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(trimethoxysilyl)ethyl]- (9CI) (CA INDEX NAME)



IT 214675-88-4P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
 (reactant; manufacture of siloxane compns. containing cyclodextrin derivs.)

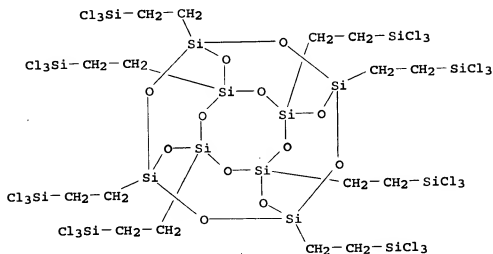
as

porogens for forming insulation films with low dielec. constant)

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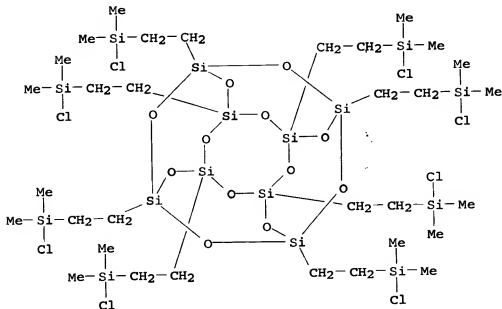
RN 214675-88-4 HCAPLUS  
 CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(trichlorosilyl)ethyl]- (9CI) (CA INDEX NAME)



IT 243146-51-2 314727-18-9  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reactant; manufacture of siloxane comps. containing cyclodextrin derivs.)

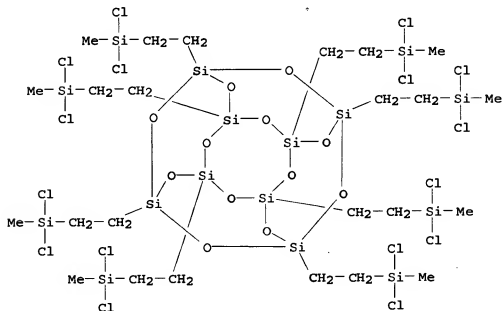
as  
 porogens for forming insulation films with low dielec. constant)

RN 243146-51-2 HCAPLUS  
 CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(chlorodimethylsilyl)ethyl]- (9CI) (CA INDEX NAME)



RN 314727-18-9 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(dichloromethylsilyl)ethyl]- (9CI) (CA INDEX NAME)



IT 463962-12-1P 463962-13-2P 463962-14-3P

463962-15-4P 463962-16-5P 463962-17-6P

463962-20-1P 463962-21-2P

RL: IMF (Industrial manufacture); PRP (Properties); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(spun-on glass precursor; manufacture of siloxane-based resins for forming insulating film between interconnecting layers in wafers by the spin-on coating process)

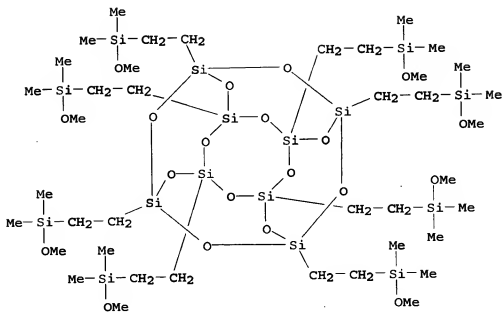
RN 463962-12-1 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(methoxydimethylsilyl)ethyl]-, polymer with 2,4,6,8-tetramethyl-2,4,6,8-tetrakis[2-(trimethoxysilyl)ethyl]cyclotetrasiloxane (9CI) (CA INDEX NAME)

CM 1

CRN 463962-09-6

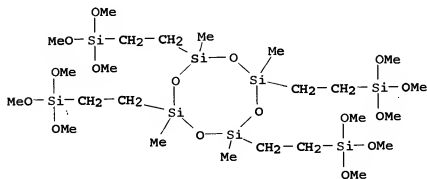
CMP C40 H104 O20 Si16



CM 2

CRN 93236-49-8

CMF C24 H64 O16 Si8



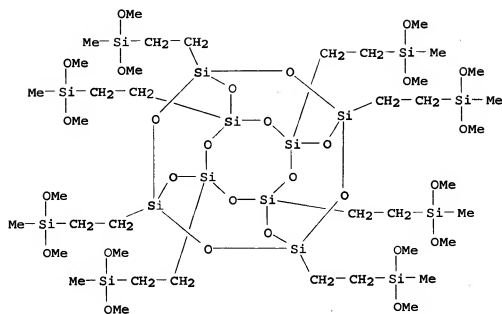
RN 463962-13-2 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(dimethoxymethylsilyl)ethyl]-, polymer with 2,4,6,8-tetramethyl-2,4,6,8-tetrakis[2-(trimethoxysilyl)ethyl]cyclotetrasiloxane (9CI) (CA INDEX NAME)

CM 1

CRN 463962-10-9

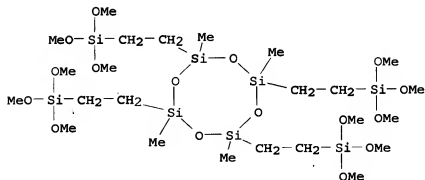
CMF C40 H104 O28 Si16



CM 2

CRN 93236-49-8

CMP C24 H64 O16 Si8



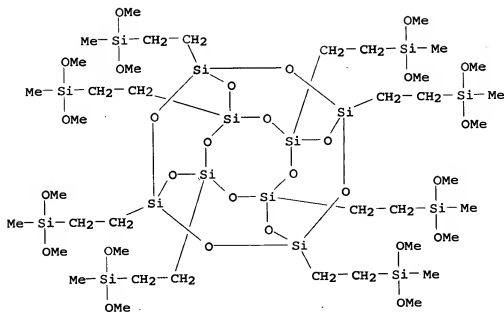
RN 463962-14-3 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(dimethoxymethylsilyl)ethyl]-, polymer with 2,4,6,8-tetramethyl-2,4,6,8-tetrakis[8-(trimethoxysilyl)octyl]cyclotetrasiloxane (9CI) (CA INDEX NAME)

CM 1

CRN 463962-10-9

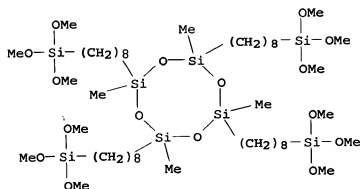
CMP C40 H104 O28 Si16



CM 2

CRN 439086-66-5

CMF C48 H112 O16 Si8



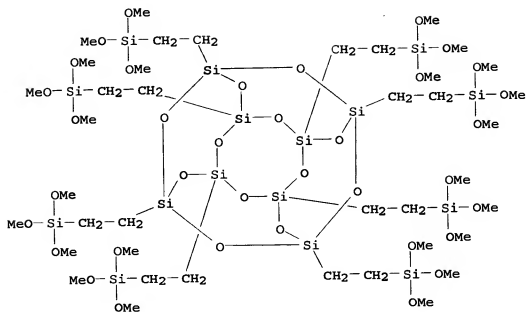
RN 463962-15-4 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(trimethoxysilyl)ethyl]-, polymer with 2,4,6,8-tetramethyl-2,4,6,8-tetrakis[2-(trimethoxysilyl)ethyl]cyclotetrasiloxane (9CI) (CA INDEX NAME)

CM 1

CRN 463962-11-0

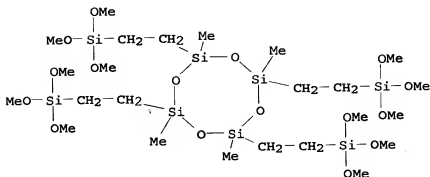
CMF C40 H104 O36 Si16



CM 2

CRN 93236-49-8

CMF C24 H64 O16 Si8



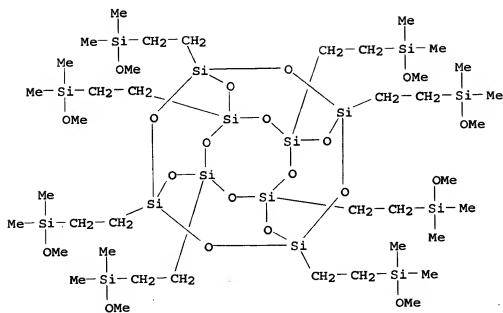
RN 463962-16-5 HCAPLUS

CN Silicic acid (H4SiO4), tetramethyl ester, polymer with octakis[2-(methoxydimethylsilyl)ethyl]pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane and 2,4,6,8-tetramethyl-2,4,6,8-tetrakis[2-(trimethoxysilyl)ethyl]cyclotetrasiloxane (9CI) (CA INDEX NAME)

CM 1

CRN 463962-09-6

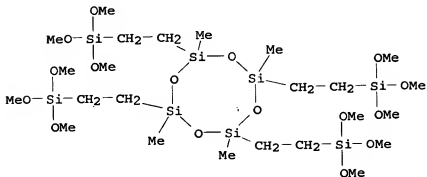
CMF C40 H104 O20 Si16



CM 2

CRN 93236-49-8

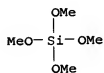
CMF C24 H64 O16 Si8



CM 3

CRN 681-84-5

CMF C4 H12 O4 Si

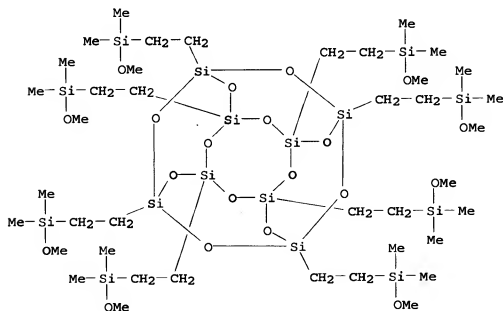


RN 463962-17-6 HCAPLUS  
 CN Silicic acid (H4SiO4), tetramethyl ester, polymer with octakis[2-(methoxydimethylsilyl)ethyl]pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, 2,4,6,8-tetramethyl-2,4,6,8-tetrakis[2-(trimethoxysilyl)ethyl]cyclotetrasiloxane and trimethoxymethylsilane (9CI)  
 (CA INDEX NAME)

CM 1

CRN 463962-09-6

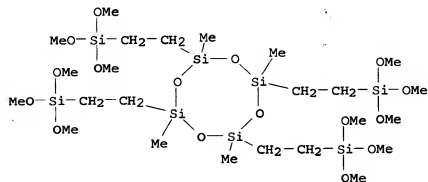
CMF C40 H104 O20 Si16



CM 2

CRN 93236-49-8

CMF C24 H64 O16 Si8





CM 3

CRN 1185-55-3

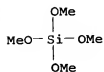
CMF C4 H12 O3 Si



CM 4

CRN 681-84-5

CMF C4 H12 O4 Si



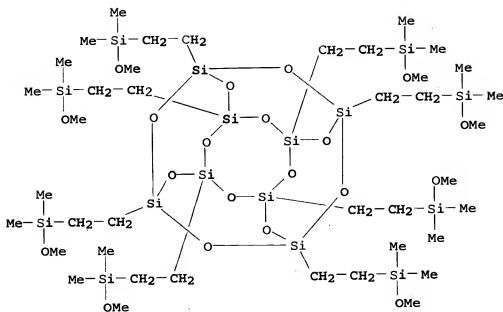
RN 463962-20-1 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(methoxydimethylsilyl)ethyl]-, polymer with trimethoxymethylsilane (9CI)  
(CA INDEX NAME)

CM 1

CRN 463962-09-6

CMF C40 H104 O20 Si16



CM 2

CRN 1185-55-3

CMF C4 H12 O3 Si



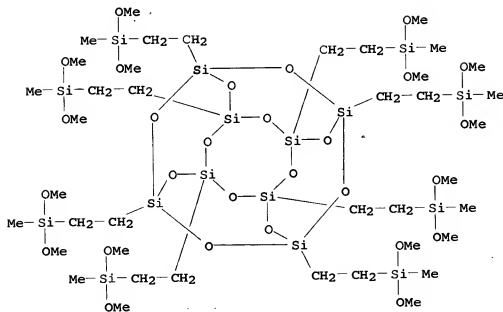
RN 463962-21-2 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(dimethoxymethylsilyl)ethyl]-, polymer with trimethoxymethylsilane (9CI)  
(CA INDEX NAME)

CM 1

CRN 463962-10-9

CMF C40 H104 O28 Si16



CM 2

CRN 1185-55-3

CMF C4 H12 O3 Si



RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L34 ANSWER 14 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2002:752349 HCAPLUS

DN 137:287703

TI Cyclodextrin composition for preparing substances having nano-pores

IN Yim, Jin Heong; Mah, Sang Kook; Lyu, Yi Yeol; Nah, Eun Ju

PA Samsung Electronics Co., Ltd., S. Korea

SO Eur. Pat. Appl., 22 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1245628	A1	20021002	EP 2001-309616	20011114
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2002293989	A2	20021009	JP 2002-16754	20020125
KR 2002075720	A	20021005	KR 2002-14259	20020316

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

PRAI KR 2001-15883 A 20010327  
OS MARPAT 137:287703  
AB The present invention provides a composition for preparing substances having nano-pores, said composition comprising cyclodextrin derivative as porogens, thermostable organic or inorg. matrix precursor, and solvent for dissolving said two solid components. There is also provided a low-k interlayer insulating film having evenly distributed nano-pores with a diameter less than 50 Å, which is required for semiconductor devices. Thus, hydrosilylating 2,4,6,8-tetramethyl-2,4,6,8-tetravinylcyclotetrasiloxane with trichlorosilane, followed by reacting the resulting derivative with MeOH gave 2,4,6,8-tetramethyl-2,4,6,8-tetra(trimethoxysilyl)ethylcyclotetrasiloxane, which was ring-opening polymerized to give a polysiloxane (I). Mixing 12% a purified I with 10.0% heptakis(2,4,6-tri-O-methyl)-β-cyclodextrin in MIBK, spin coating the resulting mixture on a boron-doped Si wafer, baking at 150° and at 250° for 1 min each and calcining at 420° for 60 min gave a dielec. film with thickness 5909 Å and dielec. constant 2.25.

IC ICM C08L005-16  
ICS C09D105-16; H01L021-312  
CC 76-14 (Electric Phenomena)  
ST Section cross-reference(s): 37, 44  
IT low k coating polysiloxane nanoporous film cyclodextrin porogen  
Dielectric films  
Semiconductor devices  
(manufacture of siloxane compns. containing cyclodextrin derivs. as porogens for forming insulation films with low dielec. constant)

IT Polysiloxanes, preparation  
Silsesquioxanes  
RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(manufacture of siloxane compns. containing cyclodextrin derivs. as porogens for forming insulation films with low dielec. constant)

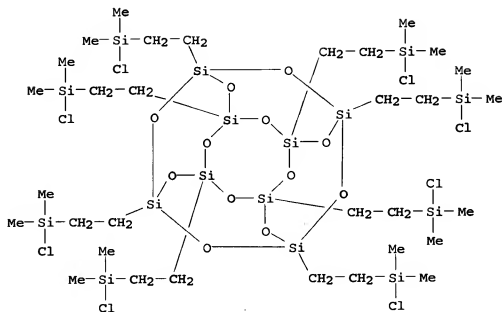
IT Silsesquioxanes  
RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(polysiloxane-, spin-on glass precursor; manufacture of siloxane compns. containing cyclodextrin derivs. as porogens for forming insulation films with low dielec. constant)

IT Polysiloxanes, preparation  
RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(silsesquioxane-, spin-on glass precursor; manufacture of siloxane compns. containing cyclodextrin derivs. as porogens for forming insulation films with low dielec. constant)

IT 188593-65-9P, 2,4,6,8-Tetramethyl-2,4,6,8-tetrakis[2-(trichlorosilyl)ethyl]cyclotetrasiloxane  
RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(intermediate; manufacture of siloxane compns. containing cyclodextrin derivs. as porogens for forming insulation films with low dielec. constant)

IT 243146-51-2, Octakis[2-(chlorodimethylsilyl)ethyl]octasilsesquioxane  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(manufacture of siloxane compns. containing cyclodextrin derivs. as porogens for forming insulation films with low dielec. constant)

- IT 93236-49-8P, 2,4,6,8-Tetramethyl-2,4,6,8-tetrakis[2-(trimethoxysilyl)ethyl]cyclotetrasiloxane 463962-09-6P, Octakis[2-(dimethylmethoxysilyl)ethyl]octasilsesquioxane  
 RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (monomer; manufacture of siloxane compns. containing cyclodextrin derivs. as porogens for forming insulation films with low dielec. constant)
- IT 21884-25-3,  $\alpha$ -Cyclodextrin 6-tosylate 23661-37-2, Peracetylated  $\alpha$ -cyclodextrin 23739-88-0, Peracetylated  $\beta$ -cyclodextrin 29556-37-4, 6-Amino-6-deoxy- $\alpha$ -cyclodextrin 30754-24-6, Heptakis(6-amino-6-deoxy)- $\beta$ -cyclodextrin 30786-38-0, Peracetylated  $\gamma$ -cyclodextrin 53784-86-4 55216-11-0, Permethylated  $\beta$ -cyclodextrin 62802-58-8, Mono(2-O-phosphoryl)- $\beta$ -cyclodextrin 68715-56-0, Hexakis(2,3,6-tri-O-methyl)- $\alpha$ -cyclodextrin 75238-11-8, Hexakis[6-deoxy-6-(1-imidazolyl)]- $\beta$ -cyclodextrin 118646-84-7 170590-51-9, Mono[2-O-carboxymethyl]- $\alpha$ -cyclodextrin 171783-90-7 464175-08-4, Mono(2-O-phosphoryl)- $\alpha$ -cyclodextrin 464175-09-5, Mono[3-O-carboxymethyl]- $\alpha$ -cyclodextrin  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (porogen; manufacture of siloxane compns. containing cyclodextrin derivs. as porogens for forming insulation films with low dielec. constant)
- IT 2554-06-5, 2,4,6,8-Tetramethyl-2,4,6,8-tetravinylcyclotetrasiloxane 10025-78-2, Trichlorosilane  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reactant; manufacture of siloxane compns. containing cyclodextrin derivs. as porogens for forming insulation films with low dielec. constant)
- IT 439086-68-7P, 2,4,6,8-Tetramethyl-2,4,6,8-tetrakis[2-(trimethoxysilyl)ethyl]cyclotetrasiloxane polymer 439086-69-8P 463962-12-1P 464175-07-3P  
 RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
 (spin-on glass precursor; manufacture of siloxane compns. containing cyclodextrin derivs. as porogens for forming insulation films with low dielec. constant)
- IT 243146-51-2, Octakis[2-(chlorodimethylsilyl)ethyl]octasilsesquioxane  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (manufacture of siloxane compns. containing cyclodextrin derivs. as porogens for forming insulation films with low dielec. constant)
- RN 243146-51-2 HCAPLUS
- CN Pentacyclo[9.5.1.13.9.15.17.13]octasiloxane, octakis[2-(chlorodimethylsilyl)ethyl]- (9CI) (CA INDEX NAME)

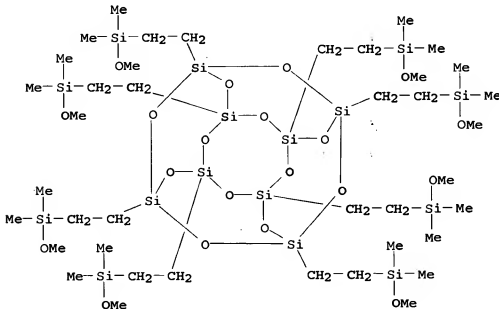


IT 463962-09-6P, Octakis[2-(dimethylmethoxysilyl)ethyl]octasilsesquioxane

RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(monomer; manufacture of siloxane compns. containing cyclodextrin derivs. as porogens for forming insulation films with low dielec. constant)

RN 463962-09-6 HCAPLUS

CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octakis[2-(methoxydimethylsilyl)ethyl]- (9CI) (CA INDEX NAME)



IT 463962-12-1P

RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
 (spin-on glass precursor; manufacture of siloxane compns. containing cyclodextrin derivs. as porogens for forming insulation films with low dielec. constant)

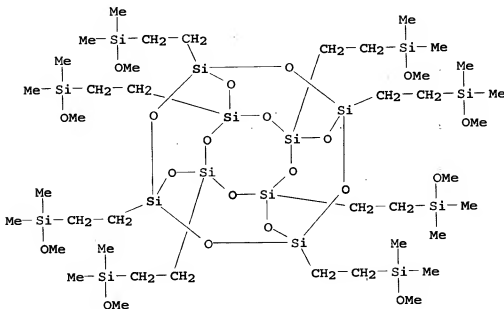
RN 463962-12-1 HCAPLUS

CN Pentacyclo[9.5.1.13.9.15.15.17.13]octasiloxane, octakis[2-(methoxydimethylsilyl)ethyl]-, polymer with 2,4,6,8-tetramethyl-2,4,6,8-tetrakis[2-(trimethoxysilyl)ethyl]cyclotetrasiloxane (9CI) (CA INDEX NAME)

CM 1

CRN 463962-09-6

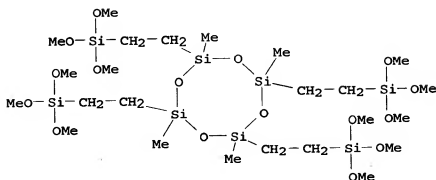
CMF C40 H104 O20 Si16



CM 2

CRN 93236-49-8

CMF C24 H64 O16 Si8



RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L34 ANSWER 15 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2002:747816 HCAPLUS  
DN 137:287293

TI Heat-resistant silsesquioxane-based polymers and their films and  
manufacture method  
IN Kobayashi, Toshiaki; Hayashi, Teruyuki; Tanaka, Masato; Yamaguchi, Koichi  
PA Ministry of Economy, Trade and Industry; National Industrial Research  
Institute, Japan; National Institute of Advanced Industrial Science and  
Technology  
SO Jpn. Kokai Tokkyo Koho, 8 pp.  
CODEN: JKXXAF

DT Patent  
LA Japanese  
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002284878	A2	20021003	JP 2001-91233	20010327
JP 3530938	B2	20040524		
US 2003054180	A1	20030320	US 2002-96667	20020314
US 6787241	B2	20040907		
JP 2001-91233	A	20010327		

AB The polymers are prepared by reacting hydridosilsesquioxanes (HSiO<sub>3/2</sub>)<sub>n</sub> (n = 4-1000) with RC.tplbond.C(R')qC.tplbond.CR [R = (un)substituted organic group, organosilyl group; R' = (un)substituted divalent organic group, organometallic group; q = 0, 1] or (un)substituted monoacetylenes. The films obtained from the polymers have good adhesion with substrates, and are useful for production of crack-free dielec. films, semiconductor passivation films, resists, and interlayer insulating films. Thus, a copolymer of 1,3-bis(phenylethynyl)benzene and pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane was dissolved in THF, spin-coated on glass, and heated at 110° for 10 min to give a smooth film showing no cracks.

IC ICM C08G077-50  
ICS C09D005-25; C09D183-14; H01L021-312

CC 76-2 (Electric Phenomena)

ST Section cross-reference(s): 38, 74  
crack free silsesquioxane interlayer insulating film;  
heat resistant silsesquioxane polymer dielec film

IT Heat-resistant materials  
(films; heat-resistant silsesquioxane-based polymers for dielec. films)  
IT Dielectric films

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

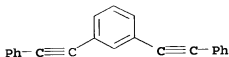


	(heat-resistant silsesquioxane-based polymers for dielec. films)
IT	Silsesquioxanes
	RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
	(heat-resistant silsesquioxane-based polymers for dielec. films)
IT	Films
	(heat-resistant; heat-resistant silsesquioxane-based polymers for dielec. films)
IT	199869-66-4P, 1,3-Bis(phenylethynyl)benzene-pentacyclo[9.5.1.13.9.15.17.13]octasiloxane copolymer
	RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
	(heat-resistant silsesquioxane-based polymers for dielec. films)
IT	199869-66-4P, 1,3-Bis(phenylethynyl)benzene-pentacyclo[9.5.1.13.9.15.17.13]octasiloxane copolymer
	RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
	(heat-resistant silsesquioxane-based polymers for dielec. films)
RN	199869-66-4 HCAPLUS
CN	Pentacyclo[9.5.1.13.9.15.17.13]octasiloxane, polymer with 1,3-bis(phenylethynyl)benzene (9CI) (CA INDEX NAME)

CM 1

CRN 13141-36-1

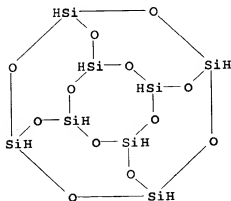
CMF C22 H14



CM 2

CRN 281-50-5

CMF H8 O12 S18



L34 ANSWER 16 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2001:495353 HCAPLUS

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

DN 135:93603  
TI Heat-resistant resin compositions and insulating materials using them  
IN Yoshida, Tatsuhiko; Enoki, Hisashi  
PA Sumitomo Bakelite Co., Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 7 pp.  
CODEN: JKXXAF

DT Patent  
LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001189109	A2	20010710	JP 2000-190	20000105
PRAI	JP 2000-190		20000105		

AB The compns. contain polybenzoxazole precursors or polybenzoxazoles and cage silsesquioxanes. Thus, a varnish containing a polybenzoxazole precursor prepared from 4,4'-dicarboxyphenyl ether dichloride and 2,2-bis(2-amino-4-hydroxyphenyl)hexafluoropropane and 1-(4-vinylphenyl)-3,5,7,9,11,13,15-heptacyclopentacyclo[9.5.1.1.1.1.1]octasiloxane was applied on a glass sheet and cured to give a transparent film showing Tg 322° and dielec. constant (1 MHz) 2.5.

IC ICM H01B003-30  
ICS H01B003-30; C08L079-04; C08L083-04; H01L021-312; H01L023-29;  
H01L023-31

CC 38-3 (Plastics Fabrication and Uses)

ST Section cross-reference(s): 76

ST polybenzoxazole precursor cage silsesquioxane elec insulator; heat resistant insulating film polybenzoxazole silsesquioxane

IT Silsesquioxanes

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(cage; heat-resistant elec. insulating compns. containing polybenzoxazoles and cage silsesquioxanes)

IT Heat-resistant materials  
(dielec.; heat-resistant elec. insulating compns. containing polybenzoxazoles and cage silsesquioxanes)

IT Polybenzoxazoles

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(fluorine-containing; heat-resistant elec. insulating compns. containing polybenzoxazoles and cage silsesquioxanes)

IT Electric insulators  
(heat-resistant; heat-resistant elec. insulating compns. containing polybenzoxazoles and cage silsesquioxanes)

IT Fluoropolymers, uses

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polybenzoxazole; heat-resistant elec. insulating compns. containing polybenzoxazoles and cage silsesquioxanes)

IT 112480-81-6P 112480-83-8P 112513-26-5P, 2,2-Bis(3-amino-4-hydroxyphenyl)hexafluoropropane-2,2-bis(4-chlorocarbonylphenyl)hexafluoropropane copolymer 133440-72-9P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

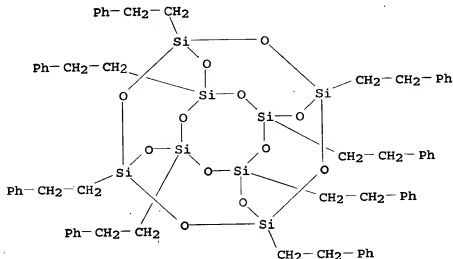
(heat-resistant elec. insulating compns. containing polybenzoxazoles and cage silsesquioxanes)

IT 100691-57-4 183200-99-9

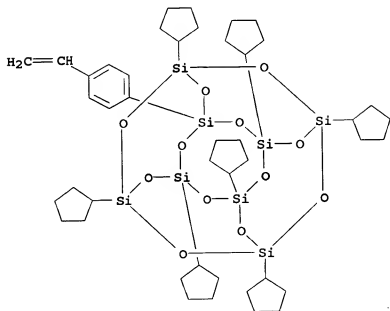
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(heat-resistant elec. insulating compns. containing polybenzoxazoles and

- cage silsesquioxanes)
- IT 1171-47-7, 2,2-Bis(4-carboxyphenyl)hexafluoropropane 2215-89-6,  
4,4'-Dicarboxydiphenyl ether  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction with thionyl chloride; heat-resistant elec. insulating  
comps. containing polybenzoxazoles and cage silsesquioxanes)
- IT 100691-57-4 183200-99-9  
RL: PRP (Properties); TEM (Technical or engineered material use); USES  
(Uses)  
(heat-resistant elec. insulating comps. containing polybenzoxazoles and  
cage silsesquioxanes)
- RN 100691-57-4 HCAPLUS
- CN Pentacyclo[9.5.1.13.9.15,15.17,13]octasiloxane, octakis(2-phenylethyl)-  
(9CI) (CA INDEX NAME)



- RN 183200-99-9 HCAPLUS
- CN Pentacyclo[9.5.1.13.9.15,15.17,13]octasiloxane, heptacyclopentyl(4-  
ethenylphenyl)- (9CI) (CA INDEX NAME)



L34 ANSWER 17 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1999:618836 HCAPLUS

DN 131:264775

TI Organic solvent-soluble polysilanes for films with good mechanical strength and their manufacture

IN Nakano, Yoshihiko; Yoshikawa, Sawako; Hayase, Shuji

PA Toshiba Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 40 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11263845	A2	19990928	JP 1998-67472	19980317
	JP 3481852	B2	20031222		
PRAI	JP 1998-67472		19980317		

AB Polysilanes, useful for elec insulators, etching masks for resist, etc., have solubility in organic solvents, glass transition temperature -40°, and repeating unit (SiHR)a(SiR)1-a (A; a = 0.1-0.9). Polysilanes having unit A or SiR1R2 [R1, R2 = H, (substituted) aliphatic hydrocarbyl, aromatic hydrocarbyl] are manufactured by mixing Cu compds. with ethers and alkali metals in solvents, reaction with halosilanes, and reaction with trimethylsilanes. Thus, HSiMeCl2 was polymerized in the presence of CuCl, 15-crown-5-ether, and Na and reacted with Me3SiCl to give a polymer, which was applied on a Si substrate to give an elec. insulating film showing permittivity 2.7.

IC ICM C08G077-60

ICS C09D005-00

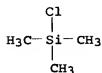
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 35, 38, 76

ST polysilane manuf elec insulator film; resist etching mask polysilane manuf; halosilane polymn alkali metal copper catalyst;

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

- sodium copper catalyst polymn chlorosilane methylsilane; crown ether  
polymn chlorosilane trimethylsilane
- IT Dielectric films  
Etching masks  
Photoresists  
(manufacture of polysilanes for elec. insulators and etching masks for resists)
- IT Polysilanes  
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(organic solvent-soluble polysilanes for films with good mech. strength and their manufacture)
- IT Polysiloxanes, properties  
Polysiloxanes, properties  
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polysilane-; organic solvent-soluble polysilanes for films with good mech. strength and their manufacture)
- IT Polysilanes  
Polysilanes  
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(siloxane-; organic solvent-soluble polysilanes for films with good mech. strength and their manufacture)
- IT 7758-89-6, Copper chloride 33100-27-5, 15-Crown-5-ether  
RL: CAT (Catalyst use); USES (Uses)  
(catalyst promoter; organic solvent-soluble polysilanes for films with good mech. strength and their manufacture)
- IT 7440-23-5, Sodium, uses  
RL: CAT (Catalyst use); USES (Uses)  
(catalyst; organic solvent-soluble polysilanes for films with good mech. strength and their manufacture)
- IT 75-77-4DP, Trimethylchlorosilane, reaction products with  
dichloroalkylsilanes 68564-15-8DP, 1,1,2,2-Tetrachloro-1,2-dimethyldisilane-1,1,2-trichloro-1,2,2-trimethyldisilane copolymer, methylated 99936-08-ODP, Methylchlorosilane homopolymer, reaction products with trimethylchlorosilane 99936-10-4DP, reaction products with trimethylchlorosilane 244292-75-9DP, reaction products with trimethylchlorosilane 244623-86-7DP, methylated  
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(organic solvent-soluble polysilanes for films with good mech. strength and their manufacture)
- IT 99936-09-1, Dichloromethylsilane-dichlorophenylsilane copolymer  
244623-22-1, Dichloroethylsilane-dichloromethylsilane-bis(3-butenyloxy)benzene copolymer  
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
(organic solvent-soluble polysilanes for films with good mech. strength and their manufacture)
- IT 75-77-4DP, Trimethylchlorosilane, reaction products with  
dichloroalkylsilanes  
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(organic solvent-soluble polysilanes for films with good mech. strength and their manufacture)
- RN 75-77-4 HCAPLUS  
CN Silane, chlorotrimethyl- (8CI, 9CI) (CA INDEX NAME)



L34 ANSWER 18 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1999:111674 HCAPLUS

DN 130:175222

TI Insulating material containing Si8 cage structure siloxane for semiconductor devices

IN Nakada, Yoshihiro; Fukuyama, Shunichi; Katayama, Michiko; Yamaguchi, Jo

PA Fujitsu Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

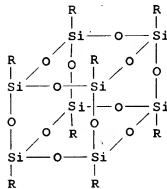
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11040554	A2	19990212	JP 1997-196064	19970722
PRAI	JP 1997-196064		19970722		
OS	MARPAT 130:175222				
GI					



I

AB The title insulating material contains a Si8 cage-structure siloxane I (R = H, F, C1-6 alkyl, C1-6 alkenyl, Ph) ≥50 volume%. The insulating material is spin-coated on a substrate, exposed to UV light at ≤300°, and heat-treated at 300-450° in an inert gas, vacuum, or an atmosphere containing O2 ≤1%. The insulating film provided a low dielec. constant

IC ICM H01L021-312

ICS H01L021-316; H01L021-768

CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST Section cross-reference(s): 38, 42

ST semiconductor device insulating film siloxane cage structure

IT Electric insulators

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

Semiconductor devices  
(insulating material containing Si8 cage-structure siloxane for semiconductor devices)

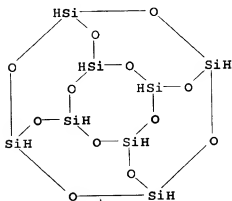
IT Polysiloxanes, uses  
RL: DEV (Device component use); USES (Uses)  
(insulating material containing Si8 cage-structure siloxane for semiconductor devices)

IT Coating process  
(spin; insulating material containing Si8 cage-structure siloxane for semiconductor devices)

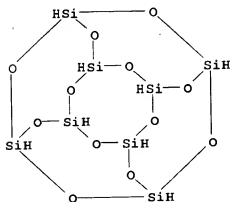
IT 281-50-5 281-50-5D, fluoro, C1-6-alkyl, C1-6-alkenyl, and Ph derivs 153315-81-2, Silanetriol, homopolymer, ladder stru 182889-73-2, Silanetriol, homopolymer  
RL: DEV (Device component use); USES (Uses)  
(insulating material containing Si8 cage-structure siloxane for semiconductor devices)

IT 281-50-5 281-50-5D, fluoro, C1-6-alkyl, C1-6-alkenyl, and Ph derivs  
RL: DEV (Device component use); USES (Uses)  
(insulating material containing Si8 cage-structure siloxane for semiconductor devices)

RN 281-50-5 HCAPLUS  
CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 281-50-5 HCAPLUS  
CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane (6CI, 8CI, 9CI) (CA INDEX NAME)



L34 ANSWER 19 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1990:593022 HCAPLUS

DN 113:193022

TI Silicone manufacture for semiconductor devices

IN Oikawa, Akira; Fukuyama, Shunichi

PA Fujitsu Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKKXAF

DT Patent

LA Japanese

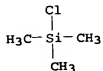
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 02129226	A2	19900517	JP 1988-281388	19881109
PRAI	JP 1988-281388		19881109		
AB	Silicones with weight-average mol. weight 5000-5,000,000 for interlayer insulating films have the structure $[R_1SiO_2/2(Z)1/2]_n$ ( $R_1 = H, OH, alkyl, alkoxy$ ; $Z = alkylene$ ; $n = 10-50,000$ ), and the $SiOH$ groups are etherified with $R_3Si$ groups ( $R = alkyl$ or $aryl$ ). Thus, $MeSi(OMe)2CH_2CH_2Si(OMe)2Me$ was hydrolytically polymerized and treated with $Me_3SiCl$ to give a trimethylsilylated siloxane.				
IC	ICM C08G077-50				
	ICS 'H01L021-90				
CC	38-3 (Plastics Fabrication and Uses)				
ST	Section cross-reference(s): 76				
IT	elec insulator semiconductor device; siloxane elec insulator semiconductor; hydrolytic polymn ethylenebisdimethoxymethylsilane				
IT	Electric insulators and Dielectrics				
IT	(alkylene group-containing siloxanes, for semiconductor devices)				
IT	Semiconductor devices				
IT	(elec. insulation of, siloxanes for)				
IT	Siloxanes and Silicones, uses and miscellaneous				
RL:	USES (Uses)				
	(alkyl alkylene, ladder, elec. insulators, for semiconductor devices)				
IT	Siloxanes and Silicones, uses and miscellaneous				
RL:	USES (Uses)				
	(polycarbosilane-, ladder, elec. insulators, for semiconductor devices)				
IT	Polycarbosilanes				
RL:	USES (Uses)				
	(siloxane-, ladder, elec. insulators, for semiconductor devices)				
IT	75-77-4D, Chlorotrimethylsilane, reaction products with siloxanes				
	107-46-0D, Hexamethyldisiloxane, reaction products with siloxanes				

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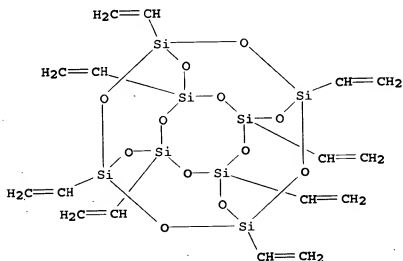


768-33-2D, Chlorodimethylphenylsilane, reaction products with siloxanes  
 RL: USES (Uses)  
 (elec. insulators, for semiconductor devices)  
 IT 3353-69-3, 1,2-Bis(dichloromethylsilyl)ethane 98789-40-3  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (hydrolytic polymerization of)  
 IT 75-77-4D, Chlorotrimethylsilane, reaction products with siloxanes  
 RL: USES (Uses)  
 (elec. insulators, for semiconductor devices)  
 RN 75-77-4 HCAPLUS  
 CN Silane, chlorotrimethyl- (8CI, 9CI) (CA INDEX NAME)



L34 ANSWER 20 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 1983:199075 HCAPLUS  
 DN 98:199075  
 TI Low-temperature dielectric films from octavinylsilsesquioxane  
 AU Korchkov, V. P.; Martynova, T. N.; Belyi, V. I.  
 CS Inst. Inorg. Chem., Novosibirsk, 630090, USSR  
 SO Thin Solid Films (1983), 101(4), 373-6  
 CODEN: THSFAP; ISSN: 0040-6090  
 DT Journal  
 LA English  
 AB The temperature dependence of the equilibrium vapor pressure of volatile octavinylsilsesquioxane (I) [69655-76-1] was studied by the Knudsen method. Ni was the best material for the evaporation cell as it does not catalyze polymerization of I. Thin solid films of I are readily converted into amorphous siloxane dielec. films by Ar or N plasma treatment.  
 CC 37-5 (Plastics Manufacture and Processing)  
 TI Section cross-reference(s): 76  
 ST octavinylsilsesquioxane plasma polymn dielec film; nickel octavinylsilsesquioxane container; siloxane dielec film  
 IT vinylsilsesquioxane  
 IT Glass, oxide  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, for polymerization of octavinylsilsesquioxane)  
 IT Electric insulators and Dielectrics  
 (film, plasma-polymerized octavinylsilsesquioxane, properties of)  
 IT Silsesquioxanes.  
 RL: USES (Uses)  
 (octavinyl, equilibrium vapor pressure of, temperature dependence of)  
 IT Dielectric constant and dispersion  
 Dielectric loss  
 Dielectric strength  
 (of octavinylsilsesquioxane, as films)  
 IT Plasma, chemical and physical effects  
 (polymerization of octavinylsilsesquioxane by)  
 IT Polymerization  
 (plasma, of octavinylsilsesquioxane)  
 IT Polymerization catalysts  
 (thermal, quartz or aluminum, for octavinylsilsesquioxane)  
 IT 7429-90-5, uses and miscellaneous 14808-60-7, uses and miscellaneous

RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, for polymerization of octavinylsilsesquioxane)  
 IT 69655-76-1  
 RL: PRP (Properties)  
 (equilibrium vapor pressure of, temperature dependence of)  
 IT 7440-02-0, uses and miscellaneous  
 RL: USES (Uses)  
 (evaporation cells, for octavinylsilsesquioxane)  
 IT 69655-76-1  
 RL: PRP (Properties)  
 (equilibrium vapor pressure of, temperature dependence of)  
 RN 69655-76-1 HCAPLUS  
 CN Pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane, octaethenyl- (9CI) (CA  
 INDEX NAME)



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